THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 145, NO. 16 — CHICAGO, ILLINOIS — APRIL 21, 1951

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PENICILLIN TREATMENT OF SYPHILIS

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It is now eight years since Mahoney first employed penicillin for the treatment of syphilis. Since then there have been innumerable reports confirming his results and attesting to the efficacy of penicillin not only for the treatment of early syphilis but for the treatment of all stages of the disease. More and more syphilologists have discarded the heavy metals and rely on penicillin alone for treatment because of the favorable results obtained with it and also because of the ease of administration, its safety, the shortened course and the low cost of such treatment. Many physicians, however, still are undecided about which is the better course to follow—the administration of penicillin alone or penicillin combined with heavy metals and, for some cases, with fever therapy. The accumulated experience of many syphilis clinics in treating thousands of patients of all types clearly indicates the superiority of treatment with penicillin alone in the vast majority of cases. It is only in an occasional case that supplemental treatment is necessary. The following specific treatment schedules are recommended for the various stages of syphilis.

EARLY SYPHILIS

The minimum requirement for the treatment of primary and secondary syphilis should consist of not less than 2,400,000 units of penicillin procaine in oil with aluminum monostearate [1] as soon as the diagnosis has been established by clinical examination, dark field illumination and/or serologic tests. The first treatment may be given in a single injection or several injections divided in each buttock. This should be followed by four additional injections of penicillin, 600,000 units each, of the same preparation, at intervals of four days. There is no necessity for adjuvant treatment with bismuth or arsenic.

For the prophylactic treatment of syphilis during the incubation period, i. e., between the time the patient has been exposed and the development of the primary lesion some 20 to 30 days later, a dose of not less than 2,400,000 units of penicillin-aluminum monostearate effectively prevents the development of syphilis in almost 100 per cent of cases. Without such treatment, sexual contact with persons known to have infectious syphilis ordinarily results in the acquisition of syphilis in approximately 50 per cent of the contacts.

Thus it is now possible to treat successfully primary and secondary syphilis patients, as well as persons exposed to infectious syphilis, with a single injection of 2,400,000 units of penicillin procaine with aluminum monostearate at a single clinic or office visit. In approximately 5 per cent of the patients with early syphilis so treated the results will be unsatisfactory. It is suggested therefore that four additional doses of 600,000 units of penicillin-aluminum monostearate be given at four day intervals.

For the small percentage of patients who show clinical relapse a second complete course should be given as soon as the clinical signs of the relapse occur. In an equivalent 5 per cent who maintain positive serologic tests but no signs of clinical relapse, a second course of treatment results in the serologic reversal to negative within a year in but few of the cases; it is nevertheless advisable to give the patient the advantage of such treatment.

SYPHILIS IN PREGNANCY

Pregnant women with syphilis should be given either 600,000 units of penicillin-aluminum monostearate administered twice weekly or 1,200,000 units administered once weekly for four weeks, for a total of 4,800,000 units. When possible, this should be administered during the latter part of the first trimester. If the patient is in the latter stage of pregnancy, a course of shorter duration is desirable, viz., 600,000 units of penicillin procaine in either oil or aqueous suspension administered daily for eight days (4,800,000 units). If labor is imminent, it is suggested that a single injection of 2,400,000 units of penicillin-aluminum monostearate be given intramuscularly and repeated one week later if the patient has not yet delivered. This treatment is recommended for the pregnant woman with previously untreated or inadequately treated syphilis in any phase, for it is aimed primarily at protecting the fetus.

1. Hereafter known as penicillin-aluminum monostearate.

Pregnant women who have already received adequate antisyphilitic treatment prior to the pregnancy either with penicillin or with heavy metals need not be re-treated if the serologic tests have become negative or if the patient has late syphilis with persistent positive serologic blood tests with a low titer (1:4 quantitative units or less). Such women should be kept under supervision, however, and re-treated if clinical or serologic relapse develops, especially during pregnancy, If in doubt it is safer to re-treat. In such cases, 900,000 units of penicillin-aluminum monostearate once weekly for four weeks (3,600,000 units) is suggested.

Women who have been treated for early syphilis or who have had serologic or clinical relapses should have frequent clinical and serologic reexaminations with quantitative serologic tests at monthly intervals. The terminations of pregnancy due to syphilis are limited almost entirely to such unrecognized relapses or reinfections when they go untreated.

Treatment Schedules *

Type of Syphilis	Dosage
Early	
Primary, Secondary	2,400,000 units at first treatment (may be divided equally in both buttocks), followed by 4 injections at 4 day intervals of 600,000 units each
Latent	
Late	
Osseous, Cutaneous, Visceral, Mucous membrane, Cardiovascular (No decompensation)	6,000,000 units: 600,000 units daily for 10 days, or 600,000 units twice weekly for 5 weeks
Neurosyphilis (All types)	6,000,000 to 12,000,000 units: 600,000 units daily or twice weekly
Pregnancy	4,800,000 units:
1st or 2nd trimester	600,000 units twice weekly for 4 weeks or 1,200,000 once a week for 4 weeks
3rd trimester	600,000 units daily for 8 days
If labor is imminent	2,400,000 units at one time. Repeat in 1 week if patient has not delivered
For relapse cases	900,000 units once a week for 4 weeks (3,600,000 units)
Congenital	
Early (Less than 2 years)	Either of the following 3 schedules: 1. 10,000 units per pound of body weight daily for 10 days 2. 15,000 units per pound of body weight twice weekly for 4 weeks 3. 40,000 units per pound of body weight once a week for 4 weeks
Late (More than 2 years)	6,000,000 units: 600,000 units daily or twice weekly
Prophylaxis	1,200,000 units in one treatment

* If response is unfavorable, a second course similar to the first may be given following a six to eight week rest period.

CONGENITAL SYPHILIS

The aim is to prevent congenital syphilis by treatment of the syphilitic mother early in her pregnancy. If the syphilis is not discovered until after the fifth month of pregnancy, it may be too late to prevent infection of the fetus but not too late to cure the fetus in utero. If there has been no prenatal treatment or if it has failed, the earlier in infancy the diagnosis can be established and treatment begun the better the chance for cure.

The prognosis in infants treated adequately with penicillin before 6 months of age compares well with that of acquired syphilis in the primary or secondary stage. The prognosis in patients between 6 months and 2 years of age compares well with that of acquired syphilis in the early latent stage, while congenital syphilis of more than two years' duration is notoriously seroresistant. Caution should be exercised in making a diagnosis of syphilis in newborn infants in the absence of clinical signs of infantile congenital syphilis, since a positive blood test of the newborn child may represent merely a passive transfer of reagins from the mother, syphilotoxemia, without infection in the child, or a biologically false positive test. Such positive tests usually change gradually to negative in two to 12 weeks after birth, while in the child who does have congenital syphilis the serologic tests gradually become strongly positive and clinical signs of infectious syphilis soon appear. Hence repeated quantitative serologic tests of the child's blood are valuable, for a rising or stationary high titer suggests infection; a falling titer or decrease in the strength of the positive tests suggests absence of infection.

Early Congenital Syphilis (Infants up to 2 Years of Age).—Decision as to which of the following schedules of treatment should be selected depends on facilities available and the convenience to the mother. Equally satisfactory results will occur no matter which schedule is used.

Schedule A: 10,000 units per pound of body weight of penicillin procaine in oil or aqueous suspension administered daily for 10 days.

Schedule B: 15,000 units of penicillin procaine in oil (penicillin-aluminum monostearate) per pound of body weight given twice weekly for four weeks.

Schedule C: 40,000 units of penicillin procaine in oil (penicillin-aluminum monostearate) per pound of body weight given once weekly for four treatments.

Late Congenital Syphilis (Past 2 Years of Age).—The treatment recommended for late congenital syphilis should also be adequate for tardive (over 5 years of age) congenital syphilis. Ten injections of 600,000 units of penicillin-aluminum monostearate each, for a total of 6,000,000 units, administered at daily intervals or twice a week for five weeks, is recommended. These cases are notoriously serologic-fast. If neurosyphilis is present, the schedule recommended for late neurosyphilis should apply. For interstitial keratitis penicillin alone is not effective, and treatment should consist of fever therapy plus penicillin. Recent reports indicate rather spectacular response of interstitial keratitis to the instillation of a suspension of cortisone acetate in strength of 1 per cent to 2.5 per cent into the conjunctival sac.

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CARDIOVASCULAR SYPHILIS

Cardiovascular disease due to syphilis presents degenerative changes that do not respond to treatment as do the inflammatory changes of syphilis in other systems.

In asymptomatic syphilitic aortitis or simple aortic regurgitation treatment with penicillin produces an arrest or retardation of the process. If the patient remains free of symptoms, it may be presumed that the treatment has influenced favorably the course of the degenerative process. This is true also of aortic aneurysm in which symptoms are mild or absent.

The important treatment of all types of cardiovascular syphilis in which decompensation has occurred is treatment of the decompensation with bed rest and digitalization. When compensation has been restored patients will tolerate penicillin, but the effect of such treatment is difficult to assess. It may be assumed, however, that patients with cardiovascular syphilis may have occult syphilitic lesions elsewhere that would benefit from such treatment.

A schedule of 10 injections of 600,000 units of penicillin-aluminum monostearate each, for a total of 6,000,000 units, administered at daily intervals or twice a week for five weeks, is recommended. A similar course may be repeated two or three times.

NEUROSYPHILIS

At the present time penicillin is an adequate drug for the treatment of all types of neurosyphilis that have been responsive to the older methods of treatment.

The plan of treatment of neurosyphilis depends on the degree of activity of the infection. The results of the spinal fluid tests serve as a guide for both the activity of the neurosyphilis and the effect of treatment. Activity of the syphilitic process is indicated by a pleocytosis, an increase in the total proteins of the spinal fluid and the presence of positive serologic tests for syphilis. Ten injections of 600,000 units of penicillin-aluminum monostearate each, given either daily or twice weekly, for a total of 6,000,000 units, is minimal adequate treatment. If the response, either serologic or clinical, is unsatisfactory, the course may be repeated after three to six months. Serologic examinations of the blood are of little significance in the follow-up of patients with central nervous system syphilis. Following treatment spinal fluid examinations should be performed at six month intervals and repeated yearly until all the spinal fluid tests give normal results. The spinal fluid tests show improvement when the pleocytosis subsides within six months, total protein values decline, and when colloidal gold and quantitative serologic tests for syphilis show decline in strength of the reactions. If the disease process has been arrested, all tests will show progressive decline to normal values without further treatment, but a period of five years or more may pass before the complement fixation tests for syphilis and colloidal gold reactions become negative.

Failure of treatment is determined by the persistence of or increase in the values of any or all the spinal fluid tests. The cell count is usually the first to show this increase.

In symptomatic neurosyphilis clinical improvement may be observed following adequate treatment with penicillin. This, however, is not a true index of therapeutic success, since the syphilitic process may still remain active in spite of clinical improvement. On the other hand, absence of clinical improvement may not always be evidence of therapeutic failure, because irreparable damage of the central nervous system may have already occurred and clinical manifestations may persist even though the active syphilitic process has been arrested. The minimal amount of treatment for symptomatic neurosyphilis is 6,000,000 units of penicillin.

LATENT SYPHILIS

A diagnosis of latent syphilis is made in patients who manifest no clinical signs of the disease, have a normal spinal fluid and positive serologic tests of the blood.

The aim in the treatment of patients with latent syphilis is to prevent the development of late sequelae. These patients have tended to remain notoriously serofast following treatment with heavy metals, and similarly the reversal of the blood tests from positive to negative following penicillin therapy has occurred in only a small percentage of them. A sufficient time has not as yet elapsed to determine the efficacy of penicillin therapy in latent syphilis in preventing the development of late sequelae and in maintaining latency. Penicillin, however, will do as well as the older methods of treatment and are safer, more economical and more convenient.

All patients with latent syphilis are entitled to the protection afforded by penicillin therapy and should receive at least 10 injections of penicillin-aluminum monostearate administered daily or twice weekly, for a total of 6,000,000 units. The blood should be examined with quantitative procedures at three month intervals for one year and less frequently thereafter in order to note the serologic response; and additional penicillin therapy should be instituted if there is serologic evidence of relapse or asymptomatic reinfection. The reversal of the serologic tests from positive to negative is not to be expected.

REACTIONS TO PENICILLIN

Reactions to penicillin therapy are expressed as the classical urticarial response, the erythematous vesicular desquamating eruption (idlike) and direct contact dermatitis. The appearance of a serum sickness-like reaction attributable to penicillin occurs rarely. In recent years there has been a steady decrease in the incidence of all types of reactions to penicillin, which seems due to the purification of the penicillin products and to the introduction of penicillin procaine. A recent survey, made by reviewing the literature, sending out a questionnaire and reviewing the records of a large hospital, indicates that the penicillin reactions have decreased steadily during the past four years. The order of frequency of the reactions was: (1) urticaria; (2) idlike reactions; (3) serum sickness-like reaction, and (4)

contact dermatitis. Although the reduction in the reaction rates is not dramatic, the total number of reactions remains low.

CONCLUSIONS

After approximately eight years of experience in treating syphilis of all types with penicillin, it is evident that penicillin therapy offers many advantages over any previous method of treatment. The most satisfactory type of penicillin now in use for the treatment of syphilis is that employing a slow absorption vehicle containing penicillin procaine in oil with 2 per cent aluminum monostearate (penicillin-aluminum monostearate). The systems of treatment recommended in this report employ penicillin-aluminum monostearate except where otherwise mentioned.

In early syphilis a clinical failure rate approximating 5 per cent and a "cure rate" of 90 per cent were noted in those who were given 2,400,000 units of penicillin—aluminum monostearate the first day of treatment, followed by four doses of 600,000 units each at four day intervals. A second course of treatment, similar to the first one, is highly successful in those who develop "clinical failures" following the first course, but is less so in reversing the blood tests to negative in the small group (5 per cent) whose tests remained positive. Reinfections following penicillin therapy should be anticipated.

In late cutaneous, mucous membrane and osseous syphilis penicillin in a total dosage of 6,000,000 units is just as effective as any combination of heavy metal therapy previously used.

Information in regard to penicillin's therapeutic value in cardiovascular syphilis is not as yet available. As long as compensation is maintained, penicillin is well tolerated. The dosage should consist of 6,000,000 units per course, and several courses may be administered. In visceral syphilis, such as hepatic or gastric, penicillin is highly effective.

At the present time penicillin is an effective method of treating neurosyphilis of all types. A course consisting of 6,000,000 to 12,000,000 units is usually adequate, although it may be repeated in three to six months if necessary. Malaria therapy may be advisable if the results from penicillin, either serologic or clinical, are unsatisfactory following penicillin.

Penicillin is the most effective drug ever used for the prevention of congenital syphilis. A pregnant woman with syphilis should receive a total of 4,800,000 units, administered at the rate of 600,000 units twice a week, or 1,200,000 units once a week. Treatment should be instituted by the end of the first trimester when possible. Patients with congenital syphilis in the early stages are responsive to penicillin therapy, but the successful results are less pronounced in the older children. In the early congenital cases a dosage of 10,000 to 15,000 units of penicillin-aluminum monostearate per pound of body weight daily for ten days or twice weekly for four weeks, or 40,000 units per pound of body weight once a week for four treatments may be given. In older children 600,000 units may be administered daily for 10 doses, or twice a week for five weeks.

In latent syphilis with persistently positive serologic blood tests penicillin has not been successful in reversing the blood tests to negative. It should be employed, however, in a total dosage approximating 6,000,000 units in an effort to maintain latency and to prevent the subsequent development of the late complications of syphilis.

The reactions to penicillin-aluminum monostearate are less numerous than were the reactions to the older penicillin preparations. Urticaria, idlike reactions on the hands and feet and a serum sickness-like reaction are the commonest. Dermatitis may appear in technicians and others who handle penicillin frequently. Herxheimer reactions occur in early cases but are rare in late cases.

The therapeutic results are better in patients with syphilis when moderate blood concentrations of penicillin are maintained for a long period of time, rather than when high concentrations obtain for short periods. Tissue level concentrations are more significant than blood levels. The longer penicillin is in sufficient concentration to be spirochetostatic the more spirocheticidal it will be.

The use of the heavy metals in the form of arsenicals or bismuth does not increase the therapeutic results of penicillin when used alone. Hence it is not necessary to augment the penicillin program.

Penicillin alone far surpasses any previously used antisyphilitic remedy when appraised from the therapeutic, economic, technical, toxicity rate or prophylactic aspects. And most important, its high index of therapeutic accomplishments is enhanced by the simplicity of administration and its availability.

Hunter's Atlas.—The publication of William Hunter's great anatomical atlas, The Gravid Uterus, in 1774 created immediate and widespread interest in the medical circles of London and the world beyond. Nothing of like scope had ever been attempted on this subject before. The depiction of the development of the pregnant uterus throughout gestation, of the foetus in utero, and of the relationship of the placenta to the uterus, as then understood, was here presented in lifelike and life-size pictures with a running text of explanation in parallel columns of Latin and English. William Hunter had found the completion of this great folio an elaborate and time-consuming occupation. . . .

Of thirty-four superb copper plates appearing in the atlas, which "represent the gravid uterus in life-size anatomically exact and artistically perfect," thirty-one were drawn by the artist, Jan van Rymsdyk. As early as 1750 Robert Strange, who was later characterized by Horace Walpole as England's foremost engraver, was at work on Plate BI (showing the foetus in utero, anterior view). This is the plate which Sir James Young Simpson considered as "a mere work of art, perhaps the most beautiful anatomical plate that has ever been given to the world. . . ."

The great anatomical atlas . . . still ranks as a classic of medical literature which has never been surpassed in its pictorial representation of human gestation.—Betsy Copping Corner, Dr. Ibis and the Artists: A Sidelight upon Hunter's Atlas, The Gravid Uterus, *Journal of History of Medicine and Allied Sciences*, Winter, 1951.

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FACTORS INFLUENCING THE DEVELOPMENT OF CEREBRAL VASCULAR ACCIDENTS

I. ROLE OF CARDIOCIRCULATORY INSUFFICIENCY

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Although cerebral vascular accidents comprise the most frequently encountered disorders of the nervous system, there is still considerable uncertainty regarding the basic pathophysiologic mechanisms responsible for their causation. No theory yet advanced, attempting to explain the stroke as a manifestation of purely local disturbances in structure and function of the intracerebral blood vessels, has been entirely satisfactory.[1] In a previous investigation [2] of 149 patients under 60 years of age who died with acute cerebral apoplexy, study of the cerebral lesion alone gave little information as to the etiologic factors or the mechanisms of production, but a survey of the postmortem findings as a whole revealed a close correlation between the cerebral lesion and the cardiocirculatory status. In 118 cases organic cardiovascular disease was present, and the apoplectic attack was associated with decompensation in 94 cases. In the remaining 31 cases the cerebral vascular accident could be related to peripheral circulatory failure resulting from surgical or traumatic shock, cachexia associated with carcinoma or tuberculosis, or ruptured cerebral aneurysms. The renaissance of interest in the therapy of cerebral vascular lesions, stimulated by the work of Gilbert and de Takats,[3] suggested that a more detailed study of the general cardiocirculatory status of patients with stroke might disclose further clues helpful in the comprehension of the pathophysiologic mechanism and in the establishment of a more rational therapeutic approach.

CASE MATERIAL

This study is based on 542 cases in which autopsies were performed during a nine year period in the laboratory of neuropathology at the Philadelphia General Hospital. In all the cases there were a history of acute apoplexy and postmortem evidence of an acute cerebral vascular accident. Cases in which the strokes occurred as a complication of wasting diseases, such as tuberculosis and cancer, blood dyscrasias or shock, or as a result of cerebral aneurysmal rupture, were excluded. The cases were equally divided as to sex. Three hundred and four patients were white; 238 were Negroes. In 315 cases the cerebral lesion was due to softening, while hemorrhage was found in 227. In 374 cases only acute vascular lesions were present, while 168 presented acute lesions in addition to a preexisting chronic lesion.

Table 1 shows the distribution according to age.

The duration of illness from the time of onset until death ranged from 24 hours or less to over three weeks. One hundred and eighty patients (33 per cent) died within the first 24 hours, and only 18 (3 per cent) survived longer than three weeks.

In all cases autopsy showed evidence of an organic cardiovascular disease. The type of cardiac disease found at autopsy is shown in table 2.

RESULTS

The presence of similar organic heart disease would not be unexpected in a group of patients over 50, but its occurrence in all patients with stroke regardless of age is noteworthy. Evidence that the relation of the stroke to a state of circulatory insufficiency due to cardiovascular disease was causal or concomitant, rather than coincidental, was suggested by the history and findings on physical examination.

Three hundred and five patients gave a history of medical treatment for "heart trouble" or frank signs of decompensation, such as peripheral edema and dyspnea prior to the onset of the stroke. It is assumed that treatment was sought because of symptoms of insufficiency rather than for heart disease itself. In 17 patients who had no history of heart disease, old infarcts were found in the heart or other viscera. In 232 of these patients (72 per cent) there was either clinical or postmortem evidence of cardiocirculatory insufficiency at the time of the stroke.

Physical examination on admission to the hospital revealed that in 280 patients there were signs of cardio-

TABLE 1.—*Age Distribution of 542 Cases with Cerebral Vascular Lesions*

Age, in years.....	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Total no. of cases	4	7	38	116	142	116	94	24	1

TABLE 2.—*Cardiac Disease Found at Autopsy in 542 Cases*

Hypertensive vascular disease (including 28 cases of malignant nephrosclerosis)	344
Syphilitic	46
Rheumatic	35
Arteriosclerotic coronary disease	28
Subacute bacterial endocarditis	26
Chronic adhesive pericarditis	5
Chronic myocardial degeneration only	58

circulatory inadequacy, such as fibrillation and other serious arrythmias, low pulse pressure or low systolic pressure with evidence of left ventricular hypertrophy, or signs pointing to decompensation, such as peripheral edema, fluid in the thorax or abdomen, an enlarged liver or an elevated blood urea nitrogen level (20 mg. per 100 cc. or over).

Postmortem evidence of cardiocirculatory failure, such as fluid in the cavities and recent infarcts in the heart and other viscera, was present in 208 cases. The average time between the patient's admission and death was six days. In 127 of these 208 cases there was also clinical evidence of insufficiency.

Clinical and/or necropsy evidence of cardiac inadequacy at the time of the cerebral vascular accident was therefore present in 361 cases (66 per cent).

In 75 cases an acute cardiovascular catastrophe was associated with the ictus. In 55 the apoplectic attack

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Read before the Section on Nervous and Mental Disease at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

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was associated with acute myocardial infarction; in 12, with a mural thrombus or thrombosis of the cardiac atrium; in 3, with thrombosis of the aorta or mesenteric arteries, and in 3, with rupture of an aortic aneurysm. Death in all these cases ensued within less than five days.

In 91 cases (17 per cent) there was no past history, clinical signs or postmortem findings suggestive of cardiocirculatory insufficiency. It is to be noted, however, that 180 patients died within 24 hours of admission. Many were comatose and moribund. The history and clinical studies in many such cases were incomplete, for obvious reasons.

COMMENT

Inability to demonstrate occluded or ruptured cerebral blood vessels at autopsy in many cases of apoplexy has suggested that the basic pathophysiologic defect may be due to local dynamic changes in the blood vessels, such as vasospasm or vasoparalysis, and/or circulatory insufficiency associated with disorder of the cardiovascular mechanisms.[4] There is no unanimity as to which of the two factors is of chief etiologic importance.

Hicks and Warren [5] believe that vasospasm is the major pathologic process. Gilbert and de Takats [3] and Amyes and Perry [6] attribute the beneficial results of stellate block in patients with cerebral thrombosis to the temporary elimination of vasomotor spasm of the cerebral vessels. There is, however, considerable doubt regarding the importance of neurovascular spasm in the regulation of cerebral circulation, since in man there is as yet no positive evidence of vasomotor nerves in the brain.[7] While the possibility of cerebral angiospasm from sympathetic impulses in man can be neither affirmed nor denied, at present the preponderance of evidence is against it.[8] The neurovascular mechanism of the brain is weak, and it is not likely to participate in any process resulting in permanent damage to the nervous tissue.[9] No significant changes in cerebral blood flow have been found after bilateral stellate block.[10]

Of considerably greater importance in the regulation of cerebral blood flow are the systemic arterial pressure and the intracranial venous pressure. What happens to the total cerebral blood flow in the last analysis depends on factors largely extracerebral.[4] Clinical evidence of the importance of systemic circulatory dysfunction in the causation of cerebral vascular accidents is illustrated by Fleming and Naffziger's [11] report of cases in which transient hemiplegia and aphasia developed subsequent to a drop in blood pressure or venous pressure in hypertensive patients. In 21 cases with cerebral complications following surgical operations, Behrend and Riggs [12] found a preexisting chronic circulatory insufficiency further aggravated by the effects of anesthesia and shock. Of 343 cases of heart disease, Dozzi [13] found a complicating cerebral lesion in 116 (33.8 per cent), and in 3.5 per cent of those with a cerebral lesion fibrillation was present. In a review of 100 consecutive autopsies showing an acute myocardial infarction or an acute cerebral vascular accident, Race and Lisa [14] found both lesions present in 15. They noted that in myocardial infarction the presenting clinical symptoms were more frequently neurologic than cardiac. Of 118 cases of cerebral hemorrhage with autopsy, Hicks and Black [15] found congestive heart failure in 15 (13 per cent) and coronary sclerosis and/or cardiac hypertrophy in 97 (82 per cent). Of 23 cases of cerebral infarction with autopsy, heart failure was present in 11 (48 per cent), and the cerebral infarction followed sudden systemic circulatory failure in 2 more (9 per cent). In spite of these findings, the authors were of the opinion that intrinsic functional vascular disease of the brain was the major factor in the pathogenesis of cerebral vascular lesions, although they admitted that in cases of cerebral infarction, in the absence of a thrombus, systemic failure was the cause of the cerebral vascular lesions. They suggested that severe anatomic heart disease could give rise to transient episodes of circulatory failure clinically unrecognized, which might precipitate cerebral anoxic vasospasm, leading to apoplexy.

In our series of 542 patients some manifestation of systemic cardiocirculatory insufficiency was evident in the past medical history, in the clinical examination or at necropsy in 451 cases (83 per cent). Evidence of generalized cardiocirculatory insufficiency was absent in only 91 cases. With the occurrence of a stroke, the symptomatology is predominantly neurologic. The patients are often moribund and sometimes die shortly after admission to the hospital. Clinical attention is usually focused primarily on the neurologic aspects, and less dramatic evidence of cardiac inadequacy may be inadvertently overlooked. It is probable that had evidence of cardiocirculatory insufficiency been carefully sought for, it would have been found in more instances.

It is our opinion that systemic cardiocirculatory insufficiency plays an important role in the etiology of cerebral vascular accidents. Our studies are not concerned with whether cerebral vasospasm does or does not actually exist. The available evidence points away from the existence of any appreciable neurovascular factor. In the presence of generalized circulatory inadequacy, however, the concomitant cerebral anoxia might well account for the local vascular changes concerned with the production of a cerebral vascular lesion.

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Since systemic circulatory insufficiency appears to be an important factor in the causation of a stroke, preventive measures and therapy should be oriented toward maintaining and restoring so far as possible the general circulatory efficiency at its optimum level. At present in cases with encephalomalacia, the chief therapeutic interest centers around the beneficial effect of stellate block. Our own experience with this procedure has not been so favorable as that of others.[16] A number of patients with cerebral vascular accidents show a surprisingly gratifying degree of spontaneous recovery, and the evaluation of the results of therapy is difficult. It is possible that some of the effects of stellate block may be the result of improvement in the systemic circulatory efficiency, since improvement following stellate block in paroxysmal auricular tachycardia and fibrillation has been noted by Leriche and Fontaine,[17] White and Smithwick[18] and others. This possibility is now being investigated.

SUMMARY

In a series of 542 cases in which an acute cerebral vascular accident was demonstrated at necropsy, the past medical history, clinical examination or autopsy revealed evidence of cardiocirculatory insufficiency in 451 (83 per cent). These findings suggest that systemic circulatory inadequacy plays an important part in the causation of cerebral vascular accidents. Preventive measures and therapy should be directed toward maintaining the general circulatory status at a maximum level.

133 South Thirty-Sixth Street.

ABSTRACT OF DISCUSSION

DR. WALTER F. SCHALLER, San Francisco: This paper is an excellent example of a statistical approach to a medical concept; in this instance it was stimulated by a previous anatomic study of vascular lesions of the brain of the type under discussion, which gave little information on local etiologic factors, an observation which will be agreed to by those with any considerable neuropathologic experience. From my own clinical experience, I agree with the authors in that, in the majority of such cases, there is evidence of cardiovascular disease and inadequate maintenance of a total and constant blood flow. I should like to emphasize—"total and constant blood flow." However, there is a category of cases, frequently of transitory vascular spasm, which can with difficulty be explained on any basis other than a predominantly functional derangement of the vascular apparatus of the brain itself. Vasomotor nerves have been histologically demonstrated in the walls of cerebral blood vessels by Stöhr and Penfield. Forbes and Finley, in 1933, demonstrated that sympathetic nerve stimulation produced constriction of arteries in the skin and pia mater of the experimental animal, although, admittedly, in far greater degree in the skin than in the pia; they estimated a ratio of 10:1. It has been suggested that this difference in response may be a wise physiologic provision and, further, that the vasomotor mechanism of the brain may become abnormally hyperactive. Among other cerebral factors are chemical substances in the arterial blood (for the most part, vasodilators), fewer vasoconstrictor substances, local activity of neurons, metabolic activity, regional vascularity, hydration and dehydration, and severe emotional disturbances, not psychological factors. In some cases, a mechanism appears to be operative such as I have described in concussion of the human brain and in animal concussion experiments, namely, dilatation of vessels, stasis and anoxemia. In a nontraumatic case of vascular hypotension in a middle-aged man, strenuous physical exercise was followed by hemiplegia, and the hypotension was aggravated by barbiturates freely administered. Energetic measures to combat low blood pressure resulted in gradual improvement to recovery.

DR. EDWIN B. BOLDREY, San Francisco: The group of patients who have not had clinical evidence of extravasation of blood, I feel, can often be helped considerably. My feeling concerning the reflex constriction of the cerebral vessels differs somewhat from that which has been presented in the paper. In the operating room my colleagues and I have demonstrated focal constriction of surface vessels and evidence of focal ischemia. Young hypertensive patients apparently may often have considerable vasospasm, which may manifest itself as transitory or permanent paralysis of cerebral function. When the occipital lobes or the motor cortex are affected, the problem is particularly apt to be brought to the neurologist's attention. Angiographic studies of these patients have demonstrated, at least within the limits of this method, an adequate patency of the major vessels supplying the area. We have concluded that the assumed vascular obstruction was transitory. Recently we have been interested in the effects of cervical sympathetic block. We recognize that this produces no demonstrable change in cerebral blood flow. On the other hand, we feel that it is followed, in patients with demonstrable cerebral vascular obstruction, by clinical and electroencephalographic evidence of improvement of cerebral function. We have had postpartum patients who have had acute nonhemorrhagic cerebral vascular accidents, which have been relieved dramatically by stellate block. Young, vasolabile hypertensive patients have had paralytic episodes which have responded also in a gratifying way. Patients who have angiographic evidence of thrombosis of the carotid artery or of one of its major branches have had clinical and electroencephalographic evidence of improvement following interruption of the sympathetic flow, even when the condition has been present for several months before treatment. Recently, Dr. John Adams, working in our laboratory, has shown, by the use of radioactive isotopes, a definite increase in the vascularity of the cerebrum on the same side, and some change in the contralateral side, following stellate block. The authors' suggestion of a possible relation of stellate block to improved cardiac function is thought provoking. We shall look forward to seeing the results of this further investigation. An important aspect of this paper is the emphasis, to us who are working constantly in a specialized field of interest, that the body is made up, not of isolated units, but, rather, of intercommunicating and interdependent ones. The role of mechanisms outside one's particular field of interest can never be ignored in the evaluation of any study one may undertake in any of the isolated systemic areas.

DR. CHARLES RUPP, Philadelphia: I hope we made it clear that we are not prepared to give the ultimate answer to the question whether cerebral vascular spasm really exists. The evidence is somewhat contradictory; but we are inclined to agree with Dr. Schmidt, who does not feel it plays any great role in the regulation of cerebral circulation. All see cases in which transient neurologic symptoms develop. The patient is put to bed; his symptoms clear up, and the theory of cerebral vascular spasm seems an attractive explanation. One may lose sight of the fact that, if a person does have signs of cardiac decompensation, rest in bed is one of the prime necessities in treatment and the improvement may well be due to a better general circulatory efficiency. If there is cerebral vascular spasm, what causes it? Are local cerebral vascular changes entirely responsible, or may failure of systemic circulation play a role? We have been interested in the effects of stellate block on the general circulatory efficiency, but that is something for a future paper. At this time we wish merely to point out that the general cardiocirculatory state appears to be a factor in the development of cerebral vascular disease. I hope no one thought we were claiming it was the sole etiologic agent.

16. Amyes and Perry.[6] Forbes.[7]

17. Leriche, R., and Fontaine, R.: Chirurgie du sympathique, Rev. neurol. 1: 1046-1085 (June) 1929.

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CORTISONE-TREATED SCLERODERMA

REPORT OF A CASE WITH AUTOPSY FINDINGS

J. George Sharnoff, M.D.
Henry L. Carideo, M.D.
and
Irwin D. Stein, M.D., Mount Vernon, N. Y.

The patient herein described, with diffuse scleroderma treated with cortisone, obtained prompt relief and improvement initially; subsequently a pronounced hypertension and hypertensive encephalopathy developed, followed by rapid death in uremia. Although it is admittedly difficult to implicate cortisone as the cause of her death, the rapidity with which the clinical picture changed and the findings at autopsy make it imperative for one to weigh the use of this drug and probably allied compounds in the treatment of certain collagen diseases. At the time of this writing, only the reports of Bayles and his associates [1] and Hines and his coworkers [2] have appeared describing four and two cases, respectively, of scleroderma improved by cortisone and adrenocorticotropic hormone therapy. However, they reported return of symptoms two to three weeks after discontinuance of therapy. They gave no further reports of follow-up.

REPORT OF CASE

A 41 year old white housewife had noted the development of multiple joint pains and swellings since early 1948, which were associated with progressive tightness and thickening of the skin of the face, chest and extremities. Another prominent feature was the presence of a marked Raynaud phenomenon, cyclic episodes of deep pallor or cyanosis of the fingers when exposed to even mild degrees of coldness.

The patient had been emotionally labile most of her life. This had become more pronounced since a thyroidectomy performed in 1947 for a toxic adenoma. In late 1949, about two years after the onset of the sclerodermatous process, a cholecystectomy was done because of recurrent gallbladder attacks. Numerous calculi were found. Blood pressure readings taken at intervals during these years were normal and approximately 100/70 mm. Hg.

She never rallied after the last operation. Despite a variety of treatments and medications, which proved only of temporary benefit and included histamine ionization, priscoline® (2-benzyl—2-imidazoline hydrochloride), roniacol® (beta-pyridyl-carbinol tartrate) and stellate ganglion block, her weight continued to fall and her mental and physical status deteriorated to the point where she talked of committing suicide. Some edema of the eyelids and ankles was noted for the first time. No good reason for its presence was evident; it became so pronounced on occasion that meralluride injection (mercuhydrin sodium solution) was used, with good diuresis and subsequent disappearance of the swelling. The patient was obviously not in congestive failure and was not myxedematous (basal metabolic rate of — 2 per cent). Urine examination was repeatedly negative for all pathological components, even for double refractile globules. The specific gravity did not exceed 1.014 on these casual specimens. The eye grounds were negative. Blood pressure was at the usual normotensive level for her, and the blood urea nitrogen was not elevated. It was believed that some obscure renal reason for the edema was present, but it was not manifest to us. Decision to use cortisone was made just prior to her admission to the hospital in June 1950.

At this time her face was a thickened mask. The lips were contracted so that the teeth were exposed. Motion of the neck, jaws, shoulders, wrists, knees and fingers was difficult and painful. She found it difficult to get out of a chair without assistance. She was unable to stand erect because of the pronounced pain in her lower back. The fingers were edematous, the skin being taut, thick, waxy smooth and glistening (fig. 1). At times, especially under emotional stress, the distal halves would become white; most often they were red or cyanotic. There was a small, indolent and painful trophic ulcer over the ball of the right index finger (fig. 2). There was moderate pitting edema of the ankles.

Laboratory findings at this time were slight hypochromic anemia, normal white blood count except in one instance when it was recorded as 20,200 per cubic millimeter with normal differential count and no eosinophilia. All casual urine samples revealed a specific gravity of 1.008 to 1.016 with a trace of albumin and a few white blood cells. A blood urea nitrogen was 16 mg. per 100 cc., total protein 6.6 Gm. per 100 cc., albumin 4.2 Gm., globulin 2.4 Gm. The carbon dioxide combining power was 46 volumes per cent, or 20.9 millequivalents. The sedimentation rate (Westergren) was 38 mm. per hour.

Fig. 1.—Photograph of hand showing taut, thick, waxy smooth and glistening skin and edematous fingers.

An intravenous glucose tolerance test gave normal results. The Thorne test showed a 50 per cent reduction in circulating eosinophils.

Cortisone therapy was started by giving 300 mg. the first day, 200 mg. the second day and 100 mg. daily thereafter. The day after cortisone therapy was begun there was dramatic improvement. The patient was able to move about freely without pain. She could now stand erect. Three days later she walked without difficulty and was able to bend and touch her fingers to the floor. She could use her fingers to apply hair pins and button her clothes. Her ankle edema diminished. After eight days of therapy some joint pains reappeared. Her mental status was strikingly improved. Her blood pressure remained unchanged. She was discharged to receive further cortisone therapy at home.

At home she received 100-125 mg. of cortisone daily, as well as 1.5 Gm. of potassium acetate. She developed some hypertrichosis and rounding of the face. Some edema of the ankles persisted. Checks on blood pressure, blood sugar and urinalyses were frequent. In mid August, there was noted for the first time a slight elevation of systolic pressure to 150/84. Cortisone therapy was continued because of increasing joint pains and stiffness. Daily blood pressure estimations remained at the 150/84 level. On August 25 cortisone therapy was discontinued and adrenocorticotropic hormone therapy started (40 mg. daily for two days). This, too, was discontinued because

From the Departments of Pathology and Medicine, Mount Vernon Hospital.

1. Bayles, T. B.; Stout, C. F.; Stillman, J. S., and Lever, W.: The Treatment of Scleroderma with Adrenocorticotrophic Hormone: Preliminary Observations, in Mote, J. R.: Proceedings of the First Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1950, pp. 447-448.

2. Hines, E. A., Jr.; Wakim, K. G.; Roth, G. M., and Kierland, R. R.: The Effect of Cortisone and Adrenocorticotropic Hormone (ACTH) on the Peripheral Circulation and Blood Pressure in Scleroderma, J. Lab. & Clin. Med. 36: 834, 1950.

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the blood pressure had risen to 180/100 and there was now moderate edema extending from ankles to legs.

Without therapy the joint pains became almost intolerable, and, on September 2, the patient had to be readmitted to the hospital because of severe "blinding" headache and vomiting. Shortly afterward, she had two generalized convulsions and became comatose. Her blood pressure was 220/120. Physical

Fig. 2.—Photograph of right hand showing trophic ulcer over the ball of the index finger.

examination revealed the features previously described, but in addition her lips and nail beds were cyanotic and her respirations shallow and rapid. There was striking chemosis of the conjunctivas; the eye grounds showed bilateral papilledema and retinal hemorrhages. The heart was not enlarged and was in sinus rhythm. The lungs were clear. The liver edge was palpable four fingerbreadths below the right costal margin. A left Babinski reflex was present, but there were no other neurological findings.

Laboratory findings at this time showed the nonprotein nitrogen rising rapidly from 93 mg. per 100 cc. on admission to 348 mg. per 100 cc. shortly before death. The carbon dioxide combining power decreased to 4.5 milliequivalents, or 10 volumes per cent. Serum calcium was 10.6 mg. per 100 cc. A spinal tap (traumatic) on admission revealed a protein of 235 mg. per 100 cc., glucose 114 mg. per 100 cc. Cell count revealed 25 lymphocytes and many red blood cells. Treatment during this period consisted chiefly of maintaining fluid balance. However, 15 days after admission, she died in pronounced uremia.

Postmortem was done the day of death and was limited to examination of chest and abdomen. The essential organ findings were a bilateral lower lobe bronchopneumonia, a myocardial

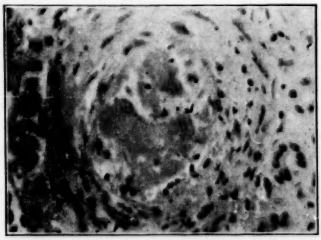

Fig. 3.—Photomicrograph of the arteries of interlobular caliber showing a decided intimal fibrosis with almost complete obliteration.

hypertrophy with chronic adhesive pericarditis and an unusual appearance of the kidneys. The latter were of normal size and configuration. The cortices revealed large mottled areas of pale yellow, alternating with dark red areas. No grossly infarcted zones could be seen. The most striking changes were noted microscopically in the kidneys. The arteries of interlobular caliber revealed a decided intimal fibrosis with almost complete obliteration of their lumens (fig. 3). The muscular coats were edematous but otherwise not involved. Infiltrating lymphocytes could be seen in the greatly thickened intimal coats. Few vessels containing occluding thrombotic masses were seen (fig. 4). Small areas of wedge-shaped infarctions involving all the structures of the cortex were seen. Similar intimal changes were noted in the larger arterioles of the pancreas. However, in addition, the adventitial coats were rather diffusely infiltrated by lymphocytes and polymorphonuclear cells, the latter being chiefly eosinophils. All other organs, including the heart, lungs, liver, spleen, adrenals, esophagus, stomach, large and small bowel, failed to disclose similar vascular changes.

COMMENT

When hypertension first became manifest, it was postulated that either there existed reversible hypertension caused by cortisone or irreversible preexisting renal vascular disease was present. At autopsy, the latter proved to be correct.

It has long been known that scleroderma is a generalized disease and not limited to skin changes. It produces severe changes in many organs, notably the esophagus, the heart and the kidneys, which cause pronounced clinical manifestations. The vascular changes in these organs have been described as a form of endarteritis [3] and have been compared with the vascular changes observed in polyarteritis nodosa.[4]

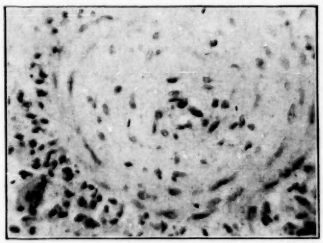

Fig. 4.—Photomicrograph showing few vessels containing occluding thrombotic masses.

Study of the vascular lesions in cases of scleroderma reviewed in the literature of the precortisone era show them to be identical with those found in our case with one exception. In most reports, hypertension was absent. Only the two cases of Pollack,[4] one of Bevans [3c] and one of Weiss and his associates [5] revealed moderate elevations of blood pressure just before death. In the patient reported by Talbott and his co-workers,[6] although there was manifestation of severe renal vascular changes and small "selective infarctions" of the kidney, hypertension did not develop.

There seems to be little doubt that the renal vascular changes in this patient were directly responsible for the

3. (*a*) Masugi, M., and Yä, S.: Die diffuse Sklerodermie und ihre Gefässveränderung, Virchows Arch. f. path. Anat. **302**: 39, 1938. (*b*) Rake, G.: On the Pathology and Pathogenesis of Scleroderma, Bull. Johns Hopkins Hosp. **48**: 212, 1931. (*c*) Bevans, M.: Pathology of Scleroderma, with Special Reference to the Changes in the Gastrointestinal Tract, Am. J. Path. **21**: 25, 1945.

4. Pollack, A. D.: Visceral and Vascular Lesions in Scleroderma, abstracted, Arch. Path. **29**: 859 (June) 1940.

5. Weiss, S.; Stead, E. A., Jr.; Warren, J. V., and Bailey, O. T.: Scleroderma Heart Disease, with Consideration of Certain Other Visceral Manifestations of Scleroderma, Arch. Int. Med. **71**: 749 (June) 1943.

6. Talbott, J. H.; Gall, E. A.; Consolazio, W. V., and Coombs, F. S.: Dermatomyositis with Scleroderma, Calcinosis and Renal Endarteritis Associated with Focal Cortical Necrosis, Arch. Int. Med. **63**: 476 (March) 1939.

hypertension, uremia and death. There also seems to be little doubt from the histological viewpoint that they mediated the adrenal cortical substance therapy. What role cortisone may have played in the acceleration of the vascular vessel changes and in the precipitation of the fatal outcome cannot be stated with any degree of certainty. The event here appears to parallel the observations of Shick and others[1] on the effects of cortisone and adrenocorticotropic hormone therapy in five patients with polyarteritis nodosa (who all had prompt relief, but subsequently two died of cardiac and renal failure). Both of these at autopsy had healing of their vascular lesions with obliteration of the vessel lumina and widespread infarctions. Similar infarctions have not been reported in the cases of scleroderma coming to necropsy prior to the cortisone and adrenocorticotropic hormone period.

One may state that hypercoagulability of the blood, which can occur with cortisone and adrenocorticotropic hormone therapy as clearly demonstrated by Cosgriff and his associates,[2] played some role in the formation of the fatal vascular thrombi. Yet there seems to be little doubt that the preexisting vascular disease of scleroderma did play some role in the final result in this instance. Although much further experience will be needed to confirm the suspicion expressed, yet it would appear that even more caution and circumspection should be employed with these potent new drugs in the treatment of the "collagen diseases" when vascular lesions are the usual occurrence.

Summary

A patient with moderately advanced and generalized scleroderma responded dramatically to cortisone. Within a period of 10 weeks an irreversible hypertension developed, and she died in uremia. At autopsy, severe vascular lesions of the type frequently found in scleroderma were present in the kidneys. In addition, a new histological observation of thrombotic ischemic infarctions of the kidneys was made. Because these have not been reported prior to the advent of cortisone and adrenocorticotropic hormone therapy, it was suspected that such treatment may have accelerated the development of the preexisting renal vascular lesions. This assumes even more validity because both clinically and histologically the developments resemble the lethal outcome in reported cases of polyarteritis nodosa.

1. Shick, R. M.; Baggenstoss, A. H., and Polley, H. F.: Effects of Cortisone and ACTH on Periarteritis Nodosa and Cranial Arteritis, Proc. Staff Meet., Mayo Clin. **25**:119, 1950.

2. Cosgriff, S. W.; Finkelstein, A. F., and Vogt, W., Jr.: Hypercoagulability of the Blood with ACTH and Cortisone Therapy, Am. J. Med. **9**:161, 1950.

Young People.—Our young people are as good as their forefathers—in some ways better. What the universities can and must do for them is to afford a breathing space, in which they have opportunities of survey, of making intellectual—and sometimes other—errors, and of passing on into real life with an equipment of both professional and humane furniture which has stood some preliminary tests. The kind of person it produces is the ultimate touchstone by which any university must be judged.—Sir John Medley, Farewell to Academe, *Medical Journal of Australia*, Dec. 30, 1950.

ARTERIOSCLEROSIS

RECENT ADVANCES IN THE DIETARY AND MEDICINAL TREATMENT

Lester M. Morrison, M.D., Los Angeles

Up to recently arteriosclerosis was regarded as an inevitable state—the inevitable result of advancing age and the remorseless effect of wear and tear or "rusting out" of the arteries. Arteriosclerosis in its various forms ranks first as a cause of death and disease in the United States.

Accumulated evidence refutes these fatalistic resignations, stressing the concept that atherosclerosis is a metabolic error, in which disorders of the blood lipids and lipoproteins play a dominant role. The work of numerous investigators[1] has shown that arteriosclerosis whose clinical aspects are better known as atherosclerosis[2] is a reversible disease in the experimental animal[3] and that it shows equally promising therapeutic responses in humans.[4]

Recent studies[5] have indicated that an excess of ingested dietary fats, or persistent alimentary hyperlipemia, appears to be the factor responsible for atherosclerosis (although I believe that there are several factors). Numerous opponents have countered this evidence with objections, some of which are being gradually explained. There are, however, many large gaps in our information on the etiology of atherosclerosis, owing mainly to the paucity of knowledge of the

The literature search used in these studies were allocated by Dr. Lawrence W. Smith.

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Read before the Section on General Practice at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

Drs. R. Sobel, W. F. Gonzalez, A. L. Chaney, L. Hall and K. B. Johnson and P. Berlin, B.S.; E. Wallian, B.S.; W. Zvirblis, B.S., and L. Gerlemann, B.S., assisted in this study.

Supported by grants-in-aid from the Committee on Therapeutic Research, Council on Pharmacy and Chemistry, American Medical Association, Los Angeles County General Hospital and Commercial Solvents Corporation.

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2. Wolfe, J. R.: Atheromatosis to be Distinguished from Arteriosclerosis, Mil. Surgeon **97**:92, 1945.

3. (*a*) Steiner,[1a] (*b*) Morrison and Rossi,[1e] (*c*) Brown, G. O.; Andrews, K. P., and Corcoran, P. J. V.: Studies on the Effect of Lipotropic Agents in Experimental Cholesterol Atherosclerosis in the Rabbit, Geriatrics **4**:178, 1949.

4. (*a*) Steiner,[1a] (*b*) Herrman,[1f] (*c*) Morrison, L. M., and Gonzalez, W. F.: Results of Treatment of Coronary Atherosclerosis with Choline, Am. Heart J. **39**:729, 1950. (*d*) Morrison, L. M.: Reduction of Mortality Rate in Coronary Atherosclerosis on a Low Cholesterol-Low Fat Diet, Am. Heart J., to be published.

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true nature of lipid and lipoprotein metabolism. The evidence briefly stated is as follows:

1. Gofman has demonstrated by an ingenious optical ultracentrifuge technique that coronary atherosclerosis is associated in most cases with specific "giant" lipoprotein particles of low physical density circulating in the blood stream.[5b] These pathological giant particles are the direct result of ingestion of fat in the diet, which Gofman has shown is instrumental in the cause of atherosclerosis.

2. Other investigators, such as Moreton,[5a] Becker, Meyer, Necheles,[5c] Zinn and Griffith,[6] Morrison, Zwierlein and Wolfson [7] and others have found that lipomicrons (any fat particle) and chylomicrons (large fat particles) circulating in the blood after the ingestion of fat in food are contributory to coronary atherosclerosis. These particles are actually lipoproteins (triglycerides with beta lipoprotein) resulting from alimentary hyperlipemia. After the absorption of fat in the small intestine into the blood stream they can be seen and counted by the eye in the dark field microscope, because of their Brownian movements and negative electrical charges, according to Frazier's technique.[8] After a fat meal these fat particles pour into the blood stream and have been stated by the above authors [5a,c] to be directly related to the development of atherosclerosis.

3. Numerous observers [9] have shown that in rabbits, dogs and fowl (with modified thyroid function) the feedings of excessive cholesterol and fat produces atherosclerosis uniformly and promptly. It was likewise demonstrated by Steiner,[1a,b] Morrison and Rossi [1d,e] and others [3c] that this atherosclerosis can be prevented or absorbed by the use of lipotropic agents such as choline, inositol and pyridoxine. These agents have been shown to mediate their action through the liver.

4. It is now well known that diseases associated with hyperlipemia during life have an increased rate and incidence of atherosclerosis. These diseases are diabetes mellitus, myxedema, xanthomatosis and nephrosis. Morrison [10] has recently offered further evidence for this relation and shown that the converse is also true, that a disease associated with a hypolipemia during life—such as thyrotoxicosis [11]—reveals a decreased incidence of atherosclerosis.

5. Analysis of the aorta and coronary arteries in atherosclerosis reveals (*a*) a marked increase in lipid composition (including cholesterol and esters)[10a,b] and (*b*) a ratio and relation of the lipid constituents of the artery approximately the same as the lipid constituents of the circulating blood, incriminating this latter as the avenue of lipid introduction into the arterial wall.

6. The dietary habits of various national groups have been studied and have been found to influence directly the incidence of atherosclerosis in the population.[12] It was thus shown that those peoples on low fat intake had a decrease or absence of atherosclerosis, and those with increased fat intake in their diet demonstrated an increase in the incidence of atherosclerosis.

In addition to the above dietary consideration, it is well known that constitutional, genetic or familial factors are also operative in the predisposition toward atherosclerosis.[13] Clinicians have long observed the tendency toward such conditions as coronary thrombosis and cerebral thrombosis in many families. It is believed that the liver is in metabolic error in these instances [14] of familial, hereditary or constitutional hyperlipemia (hypercholesteremia).

TESTS FOR ATHEROSCLEROSIS

At present there are three tests that are of value in the detection of the development or tendency to atherosclerosis: (1) the blood serum phospholipid-cholesterol ratio, described by Kellner and co-workers,[9d] Ahrens and Kunkel [15] and Morrison,[11a] (2) Sobel and Morrison's [16] cholesterol-partitioning procedure and (3) the optical ultracentrifuge technique of Gofman and coworkers.[5b]

1. In the normal subject the blood serum phospholipid-cholesterol ratio is one or more than one, when the phospholipids are expressed as lecithin milligrams per 100 cc. (factor 25 $\times$ the serum lipid phosphorus) and the cholesterol as milligrams per 100 cc. Ahrens and Kunkel [15] have recently preferred the cholesterol-phospholipid molar ratio as being more exact and descriptive. Patients with developing or active atherosclerosis, with or without clinical symptoms, have a subnormal ratio of blood phospholipid-cholesterol (methods of lipid determination must be exact). This is held to be due to the colloidal stabilizing or "solubilizing" effect of phospholipid in dispersing the cholesterol in the blood.

2. The cholesterol-partitioning procedure of Sobel and Morrison,[16] which splits the cholesterol-protein molecular complex in the blood serum by saponin, liberates loosely bound cholesterol from the protein and

6. Zinn, W. J., and Griffith, G. C.: A Study of Serum Fat Globules in Atherosclerotic and Non-Atherosclerotic Male Subjects, Am. J. M. Sc. **220**: 597, 1950.

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9. (*a*) Steiner.[1a,b] (*b*) Morrison and Rossi.[1d,e] (*c*) Katz, L.; Stamler, J., and Horlick, L.: Cholesterol Metabolism in Health and Disease: Its Relationship to Arteriosclerosis, Am. Pract. **1**: 461, 1950. (*d*) Kellner, A.; Correll, J. W., and Ladd, A. T.: Modification of Experimental Atherosclerosis by Means of Intravenous Detergents, Am. Heart J. **38**: 455-457, 1949.

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permits an estimation of the colloidal state of cholesterol (free, unstable or "metastable" or firmly protein-bound). It was found that in the normal subject the cholesterol is firmly bound in the protein molecular complex in 60 to 100 per cent of the total cholesterol quantity and that in subjects with developing or active atherosclerosis this percentage fell to 0 to 50 per cent. The authors found that there was no correlation between the total amount of cholesterol in the blood and the state of the cholesterol, in the lipoprotein complex.

3. The ingenious optical ultracentrifuge technique of Gofman and co-workers depends on spinning the blood in tubes at over 52,000 revolutions per minute, thus demonstrating the presence of pathological lipid and lipoprotein molecules in atherosclerosis, which stem from the dietary cholesterol and fat. This technique is at present a very costly one, requiring the services of a highly skilled team working with a highly complex apparatus; it has resulted in a direct approach and understanding of the dietary role of cholesterol and fat in atherosclerosis.

I have studied these methods and compared the findings in a large series of patients (1) with atherosclerosis, (2) with miscellaneous diseases and (3) in normal subjects. It has been my experience that methods 1 and 2 are clinically accurate in approximately 75 per cent of cases. Further study, however, is required to clarify deviations from anticipated results that appear to depend on heretofore unexplained aspects of lipoprotein metabolism. The ultracentrifugal technique of Gofman is one of highest scientific accuracy but as yet beyond the scope of general usage.

TREATMENT

1. *Diet.*—It has been my practice to prescribe a low cholesterol-low fat diet (20-25 Gm. daily) for patients with atherosclerosis. The protein and carbohydrate contents are those normally followed in the balanced dietary. During a four year study of the effects of such a diet on patients with atherosclerosis, I observed [4c]: (*a*) A reduction in mortality rate of patients with coronary thrombosis and myocardial infarction, after the initial heart attack. (*b*) A reduction in total serum lipids, neutral fats, chylomicron and lipomicron counts —as indexes of lowered lipid and lipoprotein serum levels. Although the majority of patients experienced reductions in serum cholesterol values after one to two years on a low cholesterol-low fat diet, a minority of patients had fixed serum cholesterol levels. It has been my belief that such patients are constitutional or familial hypercholesteremics and/or have a disorder in liver function, related to cholesterol and lipid metabolism.[14a] Numerous patients showed an increase in phospholipid-cholesterol ratio following a reduction of cholesterol levels on this diet. (*c*) An increase in well-being, in capacity for work, and in energy output. These effects may be due in part to the reduction of weight in the obese, to the reduction of weight in subjects of "high normal" weight, to psychotherapeutic causes, to a vitamin preparation given to insure an adequate vitamin A intake on this low fat diet or to other metabolic results of a decreased fat intake. The low cholesterol-low fat diet appears in the following outline.

1. Avoid all foods high in cholesterol, such as all animal fats.

2. Use vegetable fats sparingly. (Plant sterols known as phytosterol and sitosterol are not absorbed by the gastrointestinal tract to any appreciable extent but a high fat diet seems to cause a larger synthesis of cholesterol.)

3. Adequate protein, 60-100 Gm. daily intake.

4. Carbohydrates, 250-300 Gm. daily.

5. Fat content, 20-25 Gm. daily:—cholesterol content daily range not over 75 mg.

6. The use of a daily supplementary vitamin preparation containing vitamin A concentrate is recommended.

Foods Permitted

SOUPS: Bouillon, fat-free vegetable soups, vegetable broths and soups made with skimmed milk.

MEAT, FISH AND POULTRY: Lean meats, broiled, roasted, baked or boiled.

EGGS: Egg whites as desired; not more than 2 whole eggs weekly.

MILK AND MILK PRODUCTS: One pint or more of skimmed milk or butter milk; cheese made from skimmed milk.

VEGETABLES: All cooked or raw, especially the green and yellow vegetables rich in vitamin A, namely, beet greens, chard, spinach, carrots, kale and mustard greens.

FRUITS: All fruits, raw, cooked, dried and canned. Use citrus or tomatoes daily.

SALADS: Any raw or cooked fruit or vegetable salad and gelatin salads. Serve with boiled or low fat dressings such as those containing mineral oil (refined), lemon juice, spices, vinegar, ketchup, etc.

CEREALS: All cooked or dry cereals; macaroni, spaghetti and rice; serve with skimmed milk.

BREADS: Whole wheat, enriched white, rye bread or rolls; graham and soda crackers.

DESSERTS: Fruits, tapioca, cornstarch, rice, sago, junket puddings made with skimmed milk and without egg yolks; fruit whips made with egg whites, gelatin desserts, angel food cake, macaroons and egg kisses, water ices.

CONCENTRATED SWEETS: Jam, jellies, marmalade, honey, molasses, maple syrup and sugar as desired; hard candies.

BEVERAGES: Tea, coffee or coffee substitutes; tomato juice, fruit or vegetable juices.

Foods To Be Avoided

SOUPS: Cream Soups.

MEATS: All glandular organs, as liver, brains, kidney, sweetbreads; pork and very fat meats, fat fish, fish roe.

MILK AND MILK PRODUCTS: Whole milk, cream, cheddar, Swiss and all rich cheese and cheese spreads; excessive butter and butter substitutes.

EGGS: Egg yolks.

BREADS: Hot breads, pancakes, waffles, coffee cakes, muffins, doughnuts.

DESSERTS: Any made with cream and egg yolks; pies, frozen creams, rich cakes and cookies.

CONCENTRATED FATS: The excessive use of fats in any form, as salad dressings, olive or vegetable oils, suet, chicken or pork fat.

MISCELLANEOUS: Rich gravies, olives, nuts and avocados.

2. *Lipotropic Agents.*—The discovery that lipotropic agents in the experimental animal with atherosclerosis are successful in preventing or absorbing atherosclerotic lesions [1] has led to their clinical trial and reports in human subjects with coronary atherosclerosis. (*a*) Choline and inositol have been advocated to reduce the mortality and morbidity rate of patients with coronary

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atherosclerosis by Herrman,[1f] Broun and co-workers,[3e] Steiner,[1a,b] Hueper,[1c] Leinwand and Moore,[18] Morrison and Gonzalez [19] and others. The dosage of choline alone has been a daily average of 6 Gm. of the base.[4c] The daily average of inositol alone has been 3 Gm. for periods up to three years. However, synergistically acting combinations of choline and inositol averaging half of these two dosages have been found to be clinically and biochemically effective in my experience. (On the basis of fat tolerance meals and their response to the lipotropic activity of choline and inositol as measured by chylomicron and lipomicron counts there is a difference in action of the two agents.) One of the important effects of choline and inositol is the resultant effect on the liver and increase in serum phospholipids and their turnover [19] by the liver.

Sample Menu[*] †

Meal Plan		Amount: Grams	Amount: Measure
BREAKFAST			
Fruit Juice	Orange juice	200	6⅔ ounces
Cereal	Shredded wheat	30	1 biscuit
Skimmed milk	Skimmed milk	120	4 ounces
Bread	Whole wheat toast	60	2 slices
Butter substitute	Vitamin-enriched margarine	10	1 square
Sugar	Sugar	15	3 teaspoons
Hot beverage	Coffee, tea, postum	...	...
NOON MEAL			
Soup	Skimmed milk pea soup	150	5 ounces
Meat or cheese	Cold roast lamb, lean	60	2 ounces
	Mint jelly	25	1 R. tablespoon
Vegetables	String beans	100	⅔ cup
Salad	Sliced tomato	100	1 medium
Fruit or dessert	Canned pineapple	100	1 slice
Bread	Whole wheat bread	30	1 slice
Butter substitute	Vitamin-enriched margarine	5	½ square
Hot beverage, or skim milk			
EVENING MEAL			
Fruit cocktail	Grapefruit cocktail	100	½ medium
Meat	Lean meats	60	2 ounces
Potato	Baked potato	150	1 medium
Vegetables	Asparagus	100	6-8 stalks
	Banana squash	100	½ cup
Salad	Fresh pear salad	100	1 medium
Salad dressing	Boiled dressing	20	1 tablespoon
Dessert	Lemon sherbet	90	¼ quart
Bread	Whole wheat bread	30	1 slice
Milk	Skimmed milk	180	½ pint

[*] SPECIAL INSTRUCTIONS:

Avoid oysters, caviar and other roe.
Serve only lean meat or fish.
Use only 2 egg yolks per week; egg whites may be used as desired.
Allow 1 pint or more of skim or buttermilk daily.
Use only skim milk cheese such as cottage cheese. Omit rich cheese, such as cream or Cheddar.
Use no animal fats such as lard and suet in cooking. Unless fat in diet is decidedly restricted, olive oil, crisco,[5] margarine, mayonnaise, and French dressing and other fats from vegetables and nut oils may be used occasionally as directed.
Use vegetable and fruits as desired—prepared without extra butter and cream. (Plant sterols known as "phytosterol" are not absorbed by the gastrointestinal tract to any extent.)
Prepare tapioca, cornstarch, rice pudding and junket with skim milk and without egg yolk. Whips may be made with gelatin or egg white; no cream.
Serve jelly, jam, marmalade, honey, molasses, syrup and sugar as desired.
The vegetables included in this diet are asparagus, broccoli, carrots, green beans, kale, yellow squash, pumpkin, spinach, turnip greens and other greens; other vegetables—tomato (fresh, canned or juice); vegetables commonly served raw, as celery, cucumber, lettuce and cabbage, and other cooked vegetables as beets, eggplant, onions, rutabagas and cauliflower.

† Approximate composition: carbohydrate, 261 Gm.; protein, 87 Gm.; fat, 23 Gm.; calories, 1,593; calcium, 0.89 Gm.; phosphorus, 1.29 Gm.; iron, 120 mg.; vitamin A, 9,110 I.U.; thiamine, 1.91 mg.; riboflavin, 2.6 mg., and ascorbic acid, 212 mg.

3. *Endocrine Agents.*—It has long been known that the thyroid influences fat and cholesterol metabolism.[1c] Thyroid extract in doses usually averaging 1 to 3 grains daily have been found successful in reducing the hypercholesteremia associated with hypothyroidism. In patients with subnormal basal metabolic rates or subnormal blood iodine levels, thyroid extract has been found useful in reducing any associated hypercholesteremia (in the absence of angina pectoris). It is therefore advisable that one determine the blood iodine level or basal metabolic rate in atherosclerotic patients for a better metabolic approach to the disease.

Estrogenic and androgenic hormones have also been reported to be of value in reversing atherosclerosis and senescence in the experimental animal.[20] Clinical reports by various observers have reported that daily dosages of estrogenic and androgenic hormones are of value in increasing the phospholipid-cholesterol ratio in atherosclerotic patients and in effecting clinical improvement. Multihormonal therapy has been recommended rather than one form of hormonal treatment.[20] My experience with multihormonal therapy, using dosages of 5 to 10,000 units [7] of estrogenic hormone with 5 to 10 mg. of androgens daily in subjects of both sexes past 50 years of age, has been an encouraging one, both as to improvement in serum phospholipid-cholesterol ratio and clinical effects.

The most satisfactory therapeutic results have been obtained when atherosclerotic patients have been given a combination of (*a*) a low cholesterol-low fat diet (20-25 Gm. daily), (*b*) a choline-inositol combination, taken after meals, and (*c*) where indicated by clinical and/or laboratory examinations, thyroid and/or estrogen and androgen hormones.

In following the above therapeutic program, my coworkers and I noted the following results in a series of 230 patients with coronary atherosclerosis studied and treated over a three year period [4c,d]: (1) reduction of mortality to approximately one third of the nontreated patients with coronary atherosclerosis, (2) disappearance or decrease in angina symptoms in many cases, (3) a return to normal or moderate activities or work in a group of patients who were cardiac invalids before treatment and (4) feeling of well-being, better morale and optimism in many patients undergoing treatment.

COMMENT

Recent investigators have refused to accept the hopelessness with which atherosclerosis is regarded; their studies have indicated that atherosclerosis is often a preventable and in some instance a therapeutically susceptible disease. The former concept that atherosclerosis is the result of old age and the inevitable "rusting out" of the arteries from wear and tear is now known to be an error. This is based on accumulated evidence such as is presented earlier in this paper.

Another reason for the hopeless outlook with respect to atherosclerosis is that attention had been focused on the end process in the heart, the brain and elsewhere, as a coronary thrombosis, a cerebral thrombosis and the like. It is now known that this emphasis led the observer far from the truth. The evidence now indicates that atherosclerosis is a metabolic disorder that rests on a triad of complex factors, each sharing in the development of atherosclerosis.

17. Deleted in proof.

18. Leinwand, I., and Moore, D. H.: Simultaneous Studies on the Serum Lipids and the Electrophoretic Pattern of the Serum Protein in Man, Am. Heart J. **38**: 455-480, 1949.

19. Footnotes 4c and 11a.

20. Korenchevsky, V.; Paris, S. K., and Benjamin, B.: Treatment of Senescence in Female Rats with Sex and Thyroid Hormones, J. Gerontol. **5**: 120, 1950.

The first in this triad is the high fat, high cholesterol diets eaten in the United States. This contributes toward the highest incidence of coronary thrombosis and cerebral thrombosis, with the various complications of atherosclerosis, seen in our country, unparalleled by any other nation in the world—the penalty of our "high standard of eating." It is literally true that many Americans are eating themselves to death—living to eat, rather than eating to live. These facts are emphasized by the startling figures disclosed by White, Edwards and Dry [21] and Morrison and Gonzalez,[10e] showing the recent widespread and rapid increase in atherosclerosis. These authors have shown that at present the degree of coronary atherosclerosis seen at autopsy is not linearly related to age. It increases at a rapid rate from 30 to 49 years of age; a maximum is attained from 50 to 59 years and remains at a rather constant level thereafter. It was then stressed that autopsies disclosed that the average American male has severe coronary atherosclerosis after the age of 49. White and co-workers [21] found this to be grade 3 in severity (grading 1 to 4) at some site in both left and right coronary arteries.

The second significant factor is the liver. It is well established that in atherosclerosis there is a significant and constant disorder in blood lipids and lipoprotein, which are known to be regulated and controlled by the liver [11a] and blood colloidal systems. In recent years, the introduction of lipotropic agents has shown that it is possible to prevent atherosclerosis in the experimental animal and in the human. Choline and inositol (members of the vitamin B complex) appear to be the most effective among these agents, their action being mediated through the liver.

The third member of the triad, the endocrine system, also plays an important role in atherosclerosis. Thyroid extract and estrogenic and androgenic hormones are now known to be factors in the regulation and control of atherosclerosis. Experimental studies in senescent animals have recently shown that multihormone therapy can actually prevent and may even reverse the senescence process under certain conditions. Studies in human subjects along these lines have shown encouraging progress to date and warrant further investigation.

Up to the present time there was no way of detecting the patient who was developing or was susceptible to atherosclerosis. Three tests for atherosclerosis have been proposed and are undergoing development which may take them out of the research stage. In the hands of the physician such tests could be powerful weapons in the war against our greatest cause of death and disease in the United States.

SUMMARY

Evidence is reviewed that atherosclerosis is a metabolic error, not the inevitable accompaniment of advancing age, and that it may be a preventable process. The concept is presented that atherosclerosis develops through a triad based on (*a*) a high cholesterol-high fat diet, (*b*) malfunction of the liver, involving disturbances in lipid and lipoprotein metabolism, and (*c*) deficiencies and imbalances in endocrine function implicating the thyroid and sex hormones. A program of treatment is given, shown to be useful in coronary atherosclerosis, which is based on (*a*) low fat-low cholesterol intake (20-25 Gm. daily), (*b*) the daily use of lipotropic agents, such as choline and inositol, and (*c*) the employment of thyroid extract and estrogen and androgen hormones, under the conditions described herein.

21. White, N. K.; Edwards, J. E., and Dry, T. J.: The Relationship of the Degree of Coronary Atherosclerosis with Age, in Men, Circulation **1**: (pt. 2) 645, 1950.

TORSION OF THE SPERMATIC CORD IN THE NEWBORN

Carl L. Biorn, M.D.
and
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Although there are but few reported instances of torsion of the spermatic cord in the newborn, the occurrence of two such cases in our practice within nine months has led us to believe that the condition may occur more commonly than the published data indicate. If so, this would substantiate our impression that undiagnosed torsion is one common basis for unilateral atrophic testicle so frequently encountered in urologic practice. We feel justified in reporting our two cases in order that physicians may become more aware of the condition, since atrophy or suppurative gangrene can be prevented only by early diagnosis and the knowledge that such a condition occurs. Search of the literature reveals that ours apparently represent the fourth and fifth cases to be reported in which torsion was observed during the first day of life.

REPORT OF CASES

Case 1.—Baby D. T. was delivered by cesarean section at the Palo Alto Hospital on Nov. 16, 1948. He was the second child, and the mother's pregnancy had been complicated by diabetes mellitus. The section was performed without difficulty, and the baby breathed and cried spontaneously. The birth weight was 8 pounds 2 ounces (3,685 Gm.). Physical examination following birth disclosed an entirely normal condition except for the genitalia. There was considerable enlargement of the left scrotum, which was twice the size of the normal right scrotum. The left scrotum also had a generalized edematous consistency except for a firm area in the region of the testicle, where there was also a purple discoloration. Initially it was difficult to get an accurate idea of the size or consistency of the testicle itself. About 15 hours after birth the baby was seen in consultation by members of the urologic department, who advised immediate exploration. However, opinion favoring immediate surgical measures was not unanimous, and the baby was observed until November 19 before he was finally operated on. During the intervening two days, the scrotal swelling practically disappeared, but the testicle itself remained 1½ times the size of the right (normal) gland, was very firm and over one area seemed fixed to the scrotal wall. The purple discoloration had gradually deepened and turned more bluish. At operation, when the left tunica vaginalis was opened, bloody fluid spurted freely, and the testicle was found in torsion, blue and beyond saving. Left orchiectomy was, therefore, performed. The patient recovered without complications and left the hospital with his mother on Nov. 24, 1948.

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Read before the Section on Urology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

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CASE 2.—The patient (B. T.) was born at the Palo Alto Hospital on Aug. 27, 1949, following normal and relatively easy labor. The patient's mother was a primipara, secundigravida, and had enjoyed an uncomplicated pregnancy. Fetal presentation was occipitolaeva anterior, and outlet forceps were employed for delivery. Physical examination following delivery revealed the patient's physical condition to be normal aside from the abnormal scrotal contents. The child was seen in consultation by us 18 hours following delivery. At that time the left testicle appeared very hard, measuring about 1.5 by 2 cm., and a definite blue tint of the structures beneath the scrotal skin was apparent. To complicate the situation, the child also had a right hydrocele through which the right testicle could barely be palpated. At operation on Aug. 28, 1949 the right testicle was found to be normal aside from the hydrocele of the tunica vaginalis proprius. The left testicle was found in torsion, enlarged, hard, blue and firmly embedded in adhesions that were freed only by sharp dissection. The right hydrocele was repaired, and the right testicle was fixed to the right scrotal wall to prevent subsequent torsion. Left orchiectomy was then performed. Postoperative convalescence was uneventful, and the patient left the hospital on Sept. 1, 1949.

COMMENT

So much has been written about torsion of the spermatic cord that any detailed discussion of this condition would be repetitious. However, certain aspects of our two cases warrant further emphasis. The incidence of torsion of the spermatic cord in the newborn must be higher than heretofore suspected. Apparently only three such cases have been reported prior to ours.[1] Yet our two patients were seen within a nine month interval of practice, during which approximately 2,200 infants were delivered at the Palo Alto Hospital. During this same interval, we encountered three other instances of torsion among young adults requiring surgical treatment. (One had torsion of an appendix testis, and the other two had torsion of the spermatic cord.) In view of these circumstances, we suspect that many instances of torsion in the newborn are either missed, misdiagnosed or ignored. Such undiagnosed torsion in the newborn could account for some instances of unilateral atrophic testicle seen in adults for which no etiological factor can be established.

From an etiological standpoint, it is interesting that torsion in case 2 must have occurred during intrauterine life, because the dense adhesions surrounding the damaged testicle must have been forming for much longer than the 20 hours following the child's delivery. The pathologist who examined the thickened capsule and the microscopic sections of the operative specimen estimated that the testicle had been infarcted for at least two weeks. This occurrence of torsion of the spermatic cord in utero appears to be very similar to its development during sleep in patients of older ages.

The diagnosis of this complication in the newborn must necessarily depend on objective findings. The one characteristic that was common to our cases was the blue discoloration of the involved testicle that was apparent through the scrotal skin. Taylor [1b] described this same discoloration in his patient. In one of our cases the scrotum overlying the involved testicle appeared edematous and masked palpation of the testicle, while in the other instance the testicle involved in torsion was slightly enlarged and very firm in consistency without much swelling or edema of the overlying scrotal skin. Campbell [1a] described scrotal edema in one of his two patients. In patients of an older age group we have seen the condition simulate orchitis, epididymitis, torsion of an appendix testis, strangulated hernia, hemorrhagic infarction of the testicle and tumor.

The treatment of choice in this complication involving the newborn is no different from that of the same condition occurring in older age groups; namely, exploration as soon as possible. Campbell has stated that the patient should be operated on within four hours after onset to conserve the involved organ, and even then some atrophy may be expected. The treatment of the opposite testicle deserves emphasis because subsequent torsion in older patients may occur in 5 per cent of the cases,[1a] and Abeshouse [2] found 24 instances of bilateral torsion among 350 cases reported. Bilateral simultaneous torsion has also been reported.[3] Some authors advocate practically routine fixation of the opposite testicle,[4] while others reserve this procedure for the abnormally mobile testicle.[1a] This problem of deciding whether or not to explore the opposite testicle is well illustrated by our case 2, in which the uninvolved organ was too obscured by a hydrocele to permit accurate palpation. By exploring this opposite side, we assured ourselves and the patient's mother that the opposite testicle was normal. By fixing the normal testicle to the dependent portion of the scrotum, we insured the patient against the possibility of recurrent torsion in the future.

SUMMARY

Two cases of torsion of the testicle in the newborn are reported.

One of these obviously occurred during intrauterine life.

The condition must be suspected when examination of the newborn reveals an abnormal testicle with or without edema of the scrotal wall and with bluish discoloration of the involved scrotum.

Immediate exploration of the involved organ is the treatment of choice. Exploration and fixation of the opposite testicle is advisable if any doubt concerning its viability or excess mobility is entertained.

ABSTRACT OF DISCUSSION

DR. CARL E. BURKLAND, Sacramento, Calif.: It is considered that if complete torsion of the cord exists for more than a few hours the testicle cannot be saved, and even torsion for this relatively short time may cause atrophy. The record in the literature on the management of this important condition is very poor, since in the majority of cases (over 500 have been reported in the literature) orchiectomy has had to be performed. Torsion of the spermatic cord is one of the most frequently misdiagnosed and needlessly unrecognized conditions in urology and the general practice of medicine. I have had no personal experience with torsion of the spermatic cord in

1. (*a*) Campbell, M. F.: Torsion of the Spermatic Cord in the Newborn Infant, J. Pediat. **33**: 323-327, 1948. (*b*) Taylor, M. R.: A Case of Testicle Strangulated at Birth: Castration; Recovery, Brit. M. J. **1**: 458, 1897.

2. Abeshouse, B. S.: Torsion of the Spermatic Cord: Report of 3 Cases and Review of the Literature, Urol. & Cutan. Rev. **40**: 699-714, 1936.

3. O'Connor, V. J.: Torsion of the Spermatic Cord, Surg., Gynec. & Obst. **57**: 242-246, 1933.

4. Ormand, J. K.: Torsion of the Testicle, J. A. M. A. **111**: 1910-1914 (Nov. 19) 1938.

the newborn but have seen three cases in young adults. Since congenital anomalies play an important part in the etiology of torsion, it would have been informative if the authors had described in more detail the pathophysiological changes present at operation in these two cases in the newborn, particularly as regards the degree of twist, whether intravaginal or extravaginal and what could be considered the precipitating causes for the torsion in each case. As has been intimated, the only real treatment is prompt surgical intervention. Manual detorsion does not correct the predisposing causes, and there are many cases of recurrent torsion. After each episode of torsion there is destruction of testicular substance with replacement fibrosis.

DR. MILEY B. WESSON, San Francisco: Dr. Biorn's article was particularly interesting to me, because 22 years ago Dr. Musgrave, then editor of *California & Western Medicine*, sent me a similar paper by Dr. R. P. Roantree, of Elko, Nev., for an opinion whether an article on this subject would appeal to the readers of a state medical journal. A general practitioner in a town of 3,000 population had seen in his practice two cases of torsion of the spermatic cord within three months. Dr. Biorn's paper is timely in emphasizing that torsion of the spermatic cord is a pathological entity secondary to a congenital anomaly and is not a rare condition; it must not be confused with so-called partial torsion of the spermatic cord, which in reality is merely a financial term used by industrial surgeons as a synonym for the discredited "traumatic epididymitis" that is a "garden variety" of acute epididymitis, secondary to a prostatic infection. Whenever a lesion can be attributed to trauma, it leaves the field of the private practice of medicine and is transferred to the industrial or political realm. Dr. Biorn's paper may act as a temporary "roadblock" to this raid that is now well under way.

DR. A. M. MEADS, Oakland, Calif.: Torsion of the spermatic cord is an emergency, and early recognition of the condition is paramount in saving the testicle. The condition is just rare enough to be overlooked if one does not keep it in mind. I did not diagnose the first case I saw until six months later, when the patient reported with an atrophy of the testicle. That the diagnosis is overlooked frequently for several hours is attested by the fact that when the majority of the patients reach surgery the removal of a gangrenous testicle is necessary. Two instances of torsion of the testicle in infants have occurred in the last five years in the service of the Children's Hospital of the East Bay, Oakland, Calif., one of which I saw in consultation. My experience with the older group of patients with torsion has been about the same. At the University of California students' hospital, Ernest V. Cowell Memorial Hospital, all persons with scrotal swellings are referred immediately to the urologic service, and a few of these cases have been seen early enough to save the testicle. However, almost invariably, those patients who have been seen in consultation in private practice have been treated, prior to the consultation, for epididymitis over a period of three to four days, and at operation a gangrenous testicle has been found, requiring removal. Torsion of the cord is a true emergency. A diagnosis is not, as a rule, difficult if the examining physician keeps it in mind. A paper such as Dr. Biorn's should be read to members of the general medical profession from time to time so that they in turn will keep torsion of the cord in mind when seeing an unexplained swelling in the scrotum.

DR. CARL L. BIORN, Palo Alto, Calif.: In none of the three cases of spermatic cord torsion in the newborn that we found reported in the literature and in neither of our two patients was the testicle viable enough to save. Wider dissemination of the knowledge that this complication may be expected in the newborn child should lead to earlier diagnosis and more satisfactory end results.

1. Gladstone, S. A.: Sponge Biopsy in Cancer Diagnosis, Am. J. Med. **5**: 849 (Dec.) 1948; Use of Sponge in the Collection and Preparation of Tissue for Biopsy, Am. J. Clin. Path. **19**: 92 (Jan.) 1949; Sponge Biopsy: A New Method in the Diagnosis of Cancer, Cancer **2**: 604 (July) 1949; Diagnosis of Early Carcinoma of the Cervix by Sponge Biopsy, New England J. Med. **241**: 48 (July 14) 1949; Use of Sponge in Obtaining Tissue from Stomach for Biopsy, Am. J. Clin. Path. **19**: 891 (Sept.) 1949; Application of Sponge Biopsy for Cancer Diagnosis in Office Practice, New York State J. Med. **49**: 2687 (Nov. 15) 1949.

SPONGE BIOPSY IN OFFICE PRACTICE

A NEW METHOD IN THE DIAGNOSIS OF CANCER

Sidney A. Gladstone, M.D., New York

Early curable cancer can be diagnosed only by microscopic examination of an adequate sample of tissue removed from the suspected area or lesion. No other reliable method is now available. If we wish to diagnose early curable cancer, we must subject to microscopic examination every small nodule or ulcer which according to our clinical judgment and accumulated experience may possibly be cancerous. Most of these lesions will prove to be benign. Accordingly, in order to carry out such frequent tests we need a technique which is simple, painless, harmless and accurate. Within its sphere of applicability the method of sponge biopsy appears to possess these virtues.[1] This method is a form of surface biopsy similar to surgical biopsy. Its essential feature is the use of a suitable sponge, which serves, first, as a mechanical means of collecting tissue elements from a suspected site and, second, as a vehicle for holding and transporting these tissue elements through the many steps and solutions required in the standard method of preparing and staining paraffin sections for microscopic examination.

The present report is based on the results of sponge biopsy performed on over 1,200 patients during the past two years. In the field of general practice, the method of sponge biopsy has its greatest usefulness in the diagnosis of cancers of the cervix uteri, rectum, oral cavity and skin. I shall describe the technique of sponge biopsy and summarize the results of its application in each of the several types of cancer enumerated.

The advances in methods of diagnosis and treatment developed during the present century justify a positive, aggressive and optimistic attitude toward the cancer problem. Because of its availability, the method of sponge biopsy offers the general practitioner an opportunity to play the principal part in the detection and diagnosis of several important types of early curable cancer.

TECHNIQUE

Sponge biopsy is performed by firmly rubbing a small piece of suitable sponge over the surface of a mucous membrane or ulcer suspected of being cancerous. Expressed tissue juice and detached tissue particles in suspension are absorbed into the pores of the sponge, which then is promptly dropped into a small bottle of formaldehyde solution U. S. P. diluted 1:10 to insure fixation before drying of the tissue elements. The sponges may remain in the formaldehyde solution indefinitely and are delivered to the pathologist as soon as convenient. The sponges are then processed in the routine manner like blocks of tissue, through the stages of dehydration, paraffin embedding, cutting and staining with hema-

Read before the Section on General Practice at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

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toxylin and eosin prior to microscopic examination by the pathologist. The microscopic sections will show the network of the sponge, on the surfaces and in the interstices of which will be seen the coagulum of tissue fluid and suspended cells and tissue particles. If the sponge has been rubbed in contact with a cancer, one will find cancer cells singly and in groups, as well as particles of cancer tissue with their characteristic cytologic and histologic abnormalities. It will be noted that the tissues are prepared and stained by the methods that are routine in laboratories of pathology. The final sections are presented to the pathologist in a form with which he is thoroughly familiar. The essential difference is that surgical biopsy usually presents one large tissue section, while sponge biopsy presents numerous tiny tissue particles for examination.

My colleagues and I have worked mostly with two sponges [2]: one gelatin, the other cellulose. It is interesting that these sponges are derivatives of connective tissue: one animal, the other vegetable. Satisfactory results may be obtained with either sponge if correctly used. The advantage of the gelatin sponge is that it acquires a certain stickiness after wetting, which helps it hold on to the minutest tissue fragments or cell groups. The gelatin sponge, however, is delicate and rather easily torn. The latter shortcoming may be overcome by using a special sponge biopsy forceps,[2] possessing a small diamond-shaped plate, which extends beyond the point of seizure, supporting the sponge from behind and permitting firm application and rubbing (fig. 1). The cellulose sponge has a higher tensile strength, does not tear with ordinary handling and, because of its higher abrasive action, permits the detachment and absorption of larger tissue particles in greater number. Because each of these two sponges has its advantages, we often use three or four small pieces of each in a single test. Sponges from the same lesion may be placed in the same bottle and mounted on the same slides.

Since the success or failure of sponge biopsy as a diagnostic procedure depends on the absorbtion of viable, characteristic, and diagnosable tissue in sufficient amount, a few practical suggestions may be advisable. Clear visualization of the lesion is essential. This presents no problem in lesions of the skin and oral mucosa. In the cervix, and especially in the rectum and sigmoid, good illumination through the vaginal speculum or proctoscope should be obtained and the suspected lesion clearly seen before the sponges are applied. The ideal surface for examination by sponge biopsy is a moist, more or less friable ulcer. The mixture of expressed tissue juice and detached tissue particles is easily absorbed in the pores of the sponge, and prompt immersion in formaldehyde serves to coagulate the mixture and fix it firmly on the surface and in the pores of the sponge. The protein content of the fluid increases its coagulability, because of which the fluid serves a useful mechanical purpose. Mucoid secretion, or even blood in small amounts, may serve in the same way and, far from interfering with the test, serves to hold together the tiny tissue particles within the spaces of the sponge. Accordingly, in most cases we do not advise wiping a moist and friable ulcer base before applying the sponge. Occasionally, however, the ulcer is covered with a dry scab or crust or with a thick layer of necrotic material. The diagnosable cancer tissue may lie beneath such dry and necrotic tissue. In such instances the lesion should be firmly wiped with cotton gauze to remove the top dry necrotic layer and expose the underlying moist viable tissue before the diagnostic sponge is applied.

The most convenient size of sponge is ½ inch (1.2 cm.) square and ⅛ inch (0.3 cm.) thick. When the lesion is small, the square may be cut into two rectangles. The sponge is held projecting beyond the end of a hemostat, uterine forceps or special sponge biopsy forceps (fig. 1), which has a small corrugated area that helps to dislodge tissue particles from hard granulating surfaces. In case of easily accessible lesions a piece of suitable sponge held between the thumb and index finger of the gloved hand and rubbed firmly on both sides over an ulcerating lesion will provide satisfactory preparations for diagnosis. The largest amounts of representative tissue are obtained if one uses several small sponges rather than a single large piece. One should inspect the sponge after its application. A sponge properly applied and rubbed over an ulcer should show some discoloration due to the presence of the absorbed material. Contact so delicate as to leave the sponge perfectly clean is likely to prove inadequate.

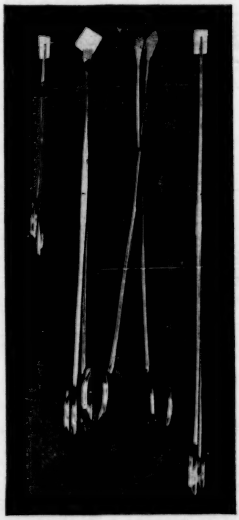

Fig. 1.—In the center are two sponge biopsy forceps, opened and closed, the latter holding a ½ inch square of sponge. The diamond-shaped plate supports the sponge from behind. The small corrugated area serves to loosen and detach tissue particles from granulating surfaces. To the left is a small hemostat; to the right, a uterine forceps, each with a rectangle of sponge. The uterine forceps is used for inserting and rotating the sponge in the lower cervical canal or in examining a rectal lesion. The hemostat and sponge are adequate for examining easily accessible lesions, such as skin, tongue, palate.

The technician will embed the sponges in paraffin in such a manner that the sections will be cut through, parallel with the plane of the sponge surface which shows the greatest discoloration and presumably holds the largest amount of tissue. Since every sponge has been rubbed on both sides, it will be impossible to make the mistake of cutting sections from a surface that has not come in contact with the lesion. If tiny free particles are seen in the formaldehyde bottle, these particles may be collected by filtration through lens paper and should be processed along with the sponge. They should be placed in contact with the sponge surface to be cut

2. The gelatin sponge (gelfoam® no. 12) was supplied by the Upjohn Company, Kalamazoo, Mich. The cellulose sponge (onkosponge no. 1) and the sponge biopsy forceps were supplied by Histomed, Inc., Paterson, N. J.

before embedding. This may be accomplished by placing the particles in the melted paraffin and then covering them with sponge. Before the paraffin hardens, the sponge should be pressed down gently with a pair of curved forceps to remove all air bubbles. If this is neglected, paraffin penetration is incomplete and good sectioning becomes difficult. The sections taken from the immediate surface of the paraffin block should be mounted. Deeper sections may also be taken.

The pathologist can quickly familiarize himself with the findings in sponge biopsy by rubbing sponges as described above over fresh tumors, e. g., cancer of the rectum, immediately after removal from the patient. Sections from such sponges will indicate the ease with which cancerous material may be absorbed by a suitable sponge and demonstrated by microscopic examination.

Fig. 2.—Sponge biopsy: early superficial carcinoma of the cervix. The nuclei are large and irregular, showing considerable variation in size and shape. The normal organization of the epithelium with progressive differentiation is completely lost. A small piece of sponge is seen in the lower left.

CANCER OF THE CERVIX

Sponge biopsy of the cervix has been applied [3] in a series of 641 women, among whom 16 cancers were found. The diagnosis in each case was confirmed by surgical biopsy or by surgical specimen. Among the 16 cases of cervical cancer, nine were clinically suspected because of the presence of visible ulceration, bleeding or both. Seven cases were of early superficial cancers with minimal signs and no symptoms, two being adenocarcinomas of the cervical canal and five being squamous cell carcinomas. In 189 cases sponge biopsy specimens were compared with surgical biopsy specimens or surgical specimens. In all 16 cases of proved cervical cancer, particles of diagnosable cancer tissue were found in the sponge biopsy sections.

The diagnosis of ulcerating bleeding cervical carcinoma presents no difficulty and is usually strongly suspected on purely clinical grounds. The diagnosis of early superficial carcinoma of the cervix, i. e., carcinoma in situ or intraepithelial carcinoma, presents a different problem. Usually signs and symptoms are completely absent. In some cases one may see a small erosion near the external os or a small area of vascular congestion or mucosal hemorrhage. Some of the patients complain of slight spotting, especially after intercourse. Because of the absence of distinctive visible changes, it is not surprising to learn, as Foote and Stewart [4] demonstrated, that a single small block of tissue removed by surgical biopsy from the most favorable site will miss half these lesions.

Early superficial carcinoma of the cervix forms a soft cellular friable layer covering the lips and cervical canal, usually near the external os. Sponges rubbed over the lips of the cervix and inserted into the lower cervical canal, rubbing against the mucosal lining, will detach and absorb particles of cancer tissue even when the lesion is minute. Three of our patients with early superficial carcinoma of the cervix returned to our clinic several times before treatment was instituted, thus offering us an opportunity for repeated sponge biopsies. These were done four, four and three times, and indications of carcinoma were found in all 11 examinations. The transition from early superficial to invasive carcinoma of the cervix may be a matter of years.[5] This long interval offers an excellent opportunity for the detection and diagnosis of these lesions while the disease is localized and amenable to removal or destruction, offering a chance for complete cure in every instance. Sponge biopsy, in the hands of the general practitioner as well as the gynecologist, offers a simple and effective means for achieving that result.

CANCER OF THE RECTUM

Sponge biopsies were performed in a series of 32 patients with rectal lesions suspected of possible carcinoma. In 15 of these patients the presence of carcinoma was demonstrated by sponge biopsy. In 14 cases diagnosis was confirmed by surgical biopsy or surgical specimen. The remaining diagnosis was confirmed by characteristic gross changes in the sigmoid with metastases to the liver observed during laparotomy. In 10 cases the patients were found to be free of cancer by sponge biopsy and each finding was confirmed by surgical biopsy or specimen. In seven more cases in which sponge biopsy showed the examined tissue to be noncancerous no additional tissue was available. In these seven cases subsequent clinical study gave no indication of carcinoma.

In each of the 15 cases of proved rectal cancer, the sponge biopsy gave positive evidence of cancer (fig. 3). In two of these cases the surgical biopsy gave false

3. Gladstone, S. A., and Selzer, I.: Cancer of the Cervix Diagnosed by Sponge Biopsy, Am. J. Surg. **81**: 307 (March) 1951.

4. Foote, F. W., Jr., and Stewart, F. W.: The Anatomical Distribution of Intraepithelial Epidermoid Carcinomas of the Cervix, Cancer **1**: 431 (Sept.) 1948.

5. Younge, P. A.; Hertig, A. T., and Armstrong, D.: A Study of 135 Cases of Carcinoma in Situ of the Cervix at the Free Hospital for Women, Am. J. Obst. & Gynec. **58**: 867 (Nov.) 1949.

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negative results. The cancerous tissue missed in these two cases by surgical biopsy was collected and demonstrated by sponge biopsy. The occasional failure to procure cancerous tissue by surgical biopsy from a patient later proved to have rectal cancer is to be expected. At times it is difficult to visualize the lesion properly, and a single piece of tissue removed by surgical biopsy may not include the cancer. Such failure appears to be less likely in sponge biopsy, which provides for the collection of many tiny particles rubbed off different areas of the base and margins of the ulcer. A more representative mixed sample for microscopic examination is thus obtained by sponge biopsy. The results of sponge biopsy in the diagnosis of cancer of the rectum demonstrate the reliability of the method as a diagnostic procedure and emphasize its value in office practice. If the rectal cancer has not passed beyond the rectal wall, surgical removal of the involved bowel offers a 100 per cent rate of cure.[6] If the regional lymph nodes are involved, only one patient in four will be saved. The application of sponge biopsy to the microscopic examination of every small suggestive ulcerating lesion of the rectum will favor the diagnosis of rectal cancer at the early completely curable stage.

CANCER OF THE MOUTH

Sponge biopsy has been applied in the examination of 40 patients presenting oral lesions suspected of being cancerous.[7] In 12 cases positive evidence of cancer was shown by sponge biopsy, and in all the diagnosis was confirmed by surgical biopsy. In nine of the remaining 28 cases, in which sponge biopsies showed no indications of cancer, surgical biopsy was done, with confirmatory negative results. In the remaining 19 cases sponge biopsy was not followed by surgical biopsy; in none of these, however, was there observed any subsequent evidence of cancer. Cancer was not found in any of our 10 female patients. Of the 12 male patients with cancer of the mouth, nine were in the sixth decade of life. The onset of symptoms in two patients was indicated as "recent." In most others the duration varied from one to six months. The sites of the lesion were pharynx four, tonsil one, tongue three, buccal mucosa two, gum one and palate one.

The procurement of characteristic cancer tissue for diagnosis by the method of sponge biopsy sometimes is not so simple in oral cancer as was previously found in cancer of the cervix uteri or rectum. Oral cancer sometimes does not present the soft and friable ulcerating surface which lends itself to sponge biopsy examination. Some of the very chronic lesions present a hard, smooth leukoplakic surface or a nonulcerating verrucous surface, the characteristic cancer tissue if present being found only in the deeper layers of the growth. The difficulties encountered with superficial surgical biopsies in such cases are present to a greater extent in sponge biopsies. Accordingly, in this type of nonulcerating lesion, diagnosis requires deep surgical biopsy. These lesions usually are the more chronic, less malignant types of oral cancer.

In contrast, the more malignant type of oral cancer is soft, cellular and friable and ulcerates early. Its duration is measured in weeks and months. In the diagnosis of such lesions, sponge biopsy is very effective and should be applied to the microscopic examination of every small ulcer or nodule that cannot be explained on the basis of trauma or infection. Of the patients treated for cancer of the mouth, about one in four survives five years after treatment. If the disease is diagnosed when the lesion is less than 2 cm. in diameter, the five year cure rate is doubled.[8] In one series, seven small cancers of the tongue treated by surgery alone were followed by cure in each instance.[9] By increasing the frequency of microscopic examination of these early lesions, sponge biopsy can favor early diagnosis and better therapeutic results.

CANCER OF THE SKIN

Sponge biopsy has been applied in 22 cases in the examination of lesions of the skin suspected of being cancerous. In 11 cases the sponge biopsies showed no indications of cancer. In six of these cases sponge biopsy was followed by surgical biopsy, with confirmatory negative results. In the remaining five cases in which the sponge biopsy revealed no cancer no additional tissue was available. The subsequent course in these five cases gave no evidence of carcinoma. Of the 11 cases of cancer, the sponge biopsy indicated definite carcinoma in eight and possible carcinoma in three. In each of

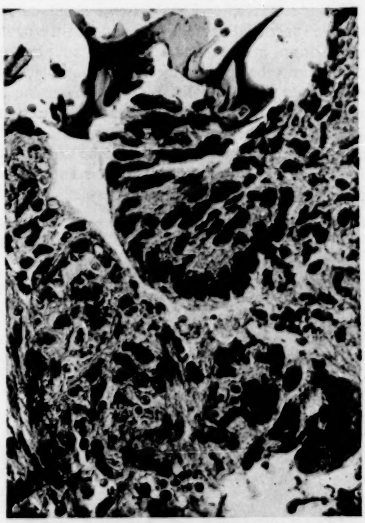

Fig. 3.—Sponge biopsy: adenocarcinoma of the rectum. Note the imperfect gland in the center, made up of large tumor cells showing marked irregularity, with variation in size and shape of nuclei. Similar tumor cells grow diffusely outside the gland. A small piece of sponge is seen above.

6. Aylett, S. O.: Early Recognition of Cancer of Rectum, Practitioner **162**: 502 (June) 1949.
7. Gladstone, S. A.: Sponge Biopsy in the Diagnosis of Cancer of the Mouth, J. Oral Surg., to be published.
8. Martin, H.: Mouth Cancer and the Dentist, J. Am. Dent. A. **33**: 845 (July 1) 1946.
9. Gibbel, M. I.; Cross, J. S., and Ariel, I. M.: Cancer of the Tongue: A Review of 330 Cases, Cancer **2**: 411 (May) 1949.

these cases, the diagnosis was established by surgical biopsy or the examination of the surgical specimen. This series includes two cases of perianal epidermoid cancers, two of early cancers of the face, one of cancer of the lip, three of metastatic or recurrent breast cancers and three of basal cell tumors.

Cancer of the skin does not always present the moist friable ulcerating surface that yields the greatest amount of characteristic tissue to the diagnostic sponge. The same obstacles encountered in the case of leukoplakias, hyperkeratoses and nonulcerating lesions of the mouth may also be found in the skin. A covering of intact skin may render the subjacent tumor tissue inaccessible to the sponge. In some basal cell tumors that have not yet ulcerated, the overlying epidermis is so thin that it is easily penetrated by the abrasive action of the cellulose sponge or the corrugated surface of the sponge biopsy forceps. To increase the amount of tissue "take" in hard granulating surfaces, one may use a small curet to loosen the superficial tissue before applying the sponge. If one performs an actual curettage, the curettings may be rubbed into the sponge, the latter being placed immediately into formaldehyde solution and serving as a vehicle for the tiny tissue elements to be examined microscopically. The objections to biopsy in connection with the suspected melanomas should be remembered. Such tumors are best removed in their entirety, surrounded by a wide zone of normal tissue.

Fig. 4.—Sponge biopsy; epidermoid carcinoma of the mouth (palate). Note the large particle of cancerous tissue made up of a completely irregular growth of atypical epithelial cells. Below is a small particle of darkly staining anaplastic cells. Below and to the right, the sponge is seen.

In three of our cases of suspected carcinoma of the skin the sponge biopsy results were suggestive rather than positive. The superficial material obtained by the sponge did not show the fully developed malignant abnormalities which the pathologist demands before he is willing to make an unequivocal, positive diagnosis of carcinoma. In such cases the report indicates the need for more and deeper tissue. If surface biopsy is inadequate, deep surgical biopsy must be performed. In any doubtful case the clinical findings presented by the physician and the microscopic findings of the pathologist should be evaluated in consultation. Such cooperation will usually save time and effort in the management of the occasional difficult case.

Fig. 5.—Sponge biopsy: epidermoid carcinoma of skin. The nuclei show variation in size and shape. The cell size and cytoplasmic content vary. The normal stratified pattern with progressive differentiation is lost. Note the large size of the tumor cells in comparison with that of the scattered polymorphonuclear leukocytes.

The accurate diagnosis and effective treatment of skin tumors depend on preliminary microscopic examination. In many cases, especially those presenting moist friable ulcerating surfaces, the more formidable procedure of surgical biopsy can be replaced by the simpler method of sponge biopsy with equally satisfactory results.

SUMMARY AND CONCLUSIONS

Sponge biopsy facilitates the microscopic examination of accessible ulcerating lesions and mucous membranes. It depends on the use of a suitable sponge (gelatin or cellulose), which serves as a mechanical means of procuring tissue from the surface to be examined as well as a vehicle for holding and carrying that tissue through the processes of paraffin embedding and staining prior to microscopic examination in the routine way. The diagnosis of cancer by sponge biopsy is based on both the cytological and the histological abnormalities observed in the specimen. The sponges are processed in the pathology laboratory along with the routine surgical sections, requiring no new equipment, apparatus or

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stains. The final sections, presented to the pathologist contain tissue particles and cells in a form with which he is familiar and which he can study and identify, making full use of his own accumulated routine experience. The method requires the firm rubbing of several small sponges in such manner that both sides will become well soaked with tissue juice and suspended tissue particles will be freed from the suspected surface. The sponges are promptly placed into 4 per cent formaldehyde solution, in which they may remain indefinitely, and are delivered to the laboratory as soon as convenient. The method makes so little demand on the time and effort of the practicing physician as to encourage its routine and frequent use in office practice. For the patient the avoidance of surgical biopsy reduces to a vanishing point the usual biopsy trauma both physical and mental.

My experience with the method covers over 1,200 sponge biopsies performed during the past two years. In a series of 641 women examined by sponge biopsy of the cervix uteri, 16 cancers were found. Nine of these were suspected clinically because of ulceration, bleeding or both. Seven cancers were early, superficial lesions, completely asymptomatic, and with signs minimal or absent. For the detection of early cervical carcinoma (carcinoma in situ, intraepithelial carcinoma) the method of sponge biopsy was found to be very reliable and distinctly superior to the method of surgical biopsy as usually performed. Sponge biopsies performed in the examination of 32 patients with ulcerating lesions of the rectum indicated the presence of cancer in 15 instances. These findings were all confirmed by surgical biopsy, surgical specimen or operative findings. In two cases with correct diagnoses of cancer by sponge biopsy, the surgical biopsy specimen had failed to include cancerous tissue and was falsely interpreted as negative. In our experience sponge biopsy has succeeded in collecting diagnosable cancerous tissue in all cases of cancer of the cervix and rectum. The procurement of such tissue in each case will be aided by several technical hints and suggestions made in the body of this report.

Among 40 sponge biopsies performed on ulcerating lesions of the mouth, 12 cancers were found, and confirmed by surgical biopsy. They were distributed as follows: pharynx, four; tonsil, one; tongue, three; buccal mucosa, two; gum, one, and palate, one. Among 22 sponge biopsies of the skin, 11 cancers were found and confirmed by surgical biopsy or surgical specimen. The series included two perianal epidermoid cancers, two early cancers of the face, one cancer of the lip, three metastatic or recurrent breast cancers and three basal cell tumors. In the skin and oral cavity nonulcerating smooth leukoplakias, verrucous lesions and hyperkeratoses are not suitable for surface biopsy, whether performed by scalpel, biting forceps or sponge. In such cases deep surgical biopsies are essential. The effectiveness of the sponge in collecting tissue from hard granulating skin lesions may be increased by the abrasive action of the sponge forceps or by loosening the tissue surface with a curet prior to application of the sponge.

The present studies indicate that sponge biopsy of the cervix may well be made part of the routine pelvic examination, especially of parous women over 35 years of age, for the detection and diagnosis of early asymptomatic superficial carcinoma. Sponge biopsy can help the physician in detecting cancer by the microscopic examination of all questionable ulcers of the cervix, rectum, mouth and skin. Such procedure is justified because there is probably no greater service the physician can render his patient than the detection and diagnosis of cancer at the early curable stage.

ABSTRACT OF DISCUSSION

DR. HOWARD L. RICHARDSON, Portland, Ore.: The usefulness of cytologic examinations was brought to the attention of the medical profession by the monograph of Papanicolaou and Traut on the vaginal smear. The widespread use of this method by unqualified persons resulted in many erroneous conclusions. The American Cancer Society recognized the problem and instituted the development of cancer teaching centers throughout the United States. At the University of Oregon Medical School, where such a center is functioning, the following practices have been established: cytological smears prepared by the Papanicolaou method are studied. All secretions submitted are preserved in formaldehyde solution U. S. P. diluted 1:10 and later congealed by trinitrophenol (picric acid) or centrifugation. The congealed mass is then embedded and sectioned in the usual manner. This combination of techniques, called the cytohistological method, embraces various scraping techniques, the sponge biopsy technique, the methods used by Dr. Ayre and other procedures. No one technique is perfect. Each has its advantages and each its own source of error, with the tissue biopsy remaining the most reliable procedure. The cytohistological method, including the sponge biopsy, however, merits recognition. It is easily applicable to the average hospital laboratory. It is not time consuming, demands no special training and is economical. Furthermore, when a positive slide is encountered, the material can be taken to another pathologist for consultation and study. This aids in the elimination of false diagnoses.

DR. EMIL NOVAK, Baltimore: Any procedure which has as its aim an intensive study of the uterine cervix and the unearthing of early preclinical or precursory phases of cancer deserves consideration. Various methods have been employed. The tried and true method of biopsy of one form or another, whether with the knife or a punch, or the surface scraping, or vaginal cytology—all of them have certain advantages, and all of them have certain limitations. As regards the cervix, I get the impression that Dr. Gladstone has used it particularly in the case of ulcerative lesions. An ulcerative lesion on the cervix is always suspect, and sometimes the diagnosis is reasonably obvious. I haven't the slightest doubt that rubbing a sponge over such an area as this will bring away some adhering particles of tumor tissue, often necrotic, sometimes giving no accurate idea of cell type or pattern and usually giving no idea as to whether or not the lesion is invasive or noninvasive. In a case of that sort most gynecologists would proceed directly to biopsy. Here we have something to shoot at, a target lesion. Why not just do a biopsy, which does not have associated with it any considerable hazard of hemorrhage or infection? With such a biopsy properly done, one can feel confident that if cancer is present it will be shown in the sections. I don't believe that the figure given by Shields Warren of more than 99 per cent of accuracy in biopsy is at all exaggerated. Dr. Gladstone recommends that his method should generally be followed by biopsy. Why not proceed directly to the biopsy? In a case of that sort I see no practical advantage in doing either vaginal cytology or sponge biopsy. I don't criticize anybody for doing these as supplementary procedures, but often they are of rather academic value in cases of this group. The real test of the accuracy of most of these methods comes in their application as

screening procedures in the normal cervix or the cervix with a very innocent-looking erosion. It is difficult to believe that rubbing an intact cervix of this sort would give a very adequate idea of what is happening in the mucous membrane. In such cases isn't it simpler to scrape away the mucous membrane rather than rub its surface with a sponge? I have done several hundred of these surface biopsies, and the slides I shall show illustrate the microscopic appearance of the long strips of mucosa often yielded by this method, as well as the long-handled sharp double spoon used for the scraping, although other techniques have been described.

These comments represent a purely personal reaction to the procedure recommended by Dr. Gladstone, and they are not to be construed as a criticism of his efforts to utilize the sponge method in the search for precursory and subclinical cancer. As a matter of fact, I hope he will continue to explore fully the possibilities of his technique.

DR. MAX P. COWETT, New York: The crux of the cancer problem is early diagnosis. The most accurate method for the diagnosis of malignancy is the microscopic examination of a portion of the tumor by an experienced and competent pathologist. Histologic examination of material removed either by surgical biopsy or by sponge biopsy is essential in establishing a diagnosis of cancer in the rectal or rectosigmoid area. The aspiration method, or use of the Turkel needle, is not applicable, in my opinion, in proctology. Dr. Gladstone has presented a simple technique which can be done by both the general practitioner and the specialist. For those who do only occasional proctoscopic and sigmoidoscopic examination, the biopsy punch has a certain element of danger. Bleeding may at times be profuse. Some competent proctologists are of the opinion that no biopsy should be done in the office but prefer to do this in the hospital. I have seen two cases of perforation in the rectosigmoid region resulting from accidents with the biopsy forceps. The sponge biopsy method is devoid of any danger, such as bleeding or perforation. Many competent authorities also believe that removal by biopsy stimulates the activity of the growth and causes dissemination of malignant cells. The method of obtaining histologic material described by Dr. Gladstone certainly causes less stimulation and dissemination. I have used this technique in about 20 cases, and the findings have indicated cancer in twelve and no cancer in eight. This was later confirmed on operation. As a proctologist, I feel that this paper represents a distinct contribution to the diagnosis of lesions in the rectum and rectosigmoid.

DR. SIDNEY A. GLADSTONE, New York: Dr. Richardson has emphasized the advantages of the method of sponge biopsy from the point of view of the pathologist. Dr. Cowett feels that the method is valuable to the proctologist. Dr. Novak questions the usefulness of the method in certain types of cases. I think, with respect to the cervix, one must consider what one is attempting to accomplish. The practitioner of medicine is anxious to establish a diagnosis of cancer for any patient coming to his office who actually has cancer of the cervix. The finer problems as to the histologic nature of that cancer or the actual degree of invasiveness may well be left for further study after the first diagnosis of the presence of cancer has been made. To that end, we have found sponge biopsy completely adequate.

According to a report recently made from the Memorial Hospital by Drs. Foote and Stewart, especially in the study of intraepithelial carcinoma of the cervix, these investigators found that surgical biopsy as usually performed will miss half the cases of early cancer of the cervix. That is readily understood because often no localizing lesion is seen, and it is impossible with the ordinary methods of surgical biopsy to procure tissue from the entire surface of the cervical lips and the cervical canal. On the other hand, it is a very simple procedure to use two or three small pieces of sponge, rub them well over the lips of the cervix, insert one into the cervical canal and turn it around several times and drop the sponges into a bottle of formaldehyde solution. In our experience in over 600 cases, we have never missed a cancer of the cervix using this simple procedure.

MANAGEMENT OF URETERAL INJURIES IN PELVIC SURGERY

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and
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This study, based in part on a review of the literature of the last 10 years, is mainly a review of our experiences in the management of 26 private patients during the last 12 years. Two of these are excluded statistically because of the recent origin of their injuries. All injuries occurred during the course of open surgical procedures in the pelvis. Injuries of the ureter due to external violence or due to the ministrations of urologists are excluded.

Perusal of the literature [1] and personal contact indicate wide diversion of opinion as to methods of ureteral repair yielding the best results. Personal contacts suggest fear and sometimes ignorance. Many reports are concerned with too few cases or present inaccurate conclusions from attempted statistical compilation of the collected experiences of others. Moore's[1r] excellent paper indicates a 10 per cent death and a 20 per cent failure rate in ureteral anastomosis, while ureterovesical anastomosis produced a 30 per cent failure rate and 4.3 per cent mortality. Adams,[1a] in summarizing his and Feiner's [1h] study, reports 11.4 per cent of the results to be perfect, 54.3 per cent fair, 30.4 per cent failures and 4.3 per cent fatal in ureterovesical anastomosis. With ureteroureteral anastomosis, perfect results were obtained in 70 per cent of the patients, failure occurred in 20 per cent and 10 per cent died. Intentional ureteral ligation in 23 patients caused the death of 11. Mortality was 3.8 per cent in nephrectomy, 83.3 per cent in bilateral deligation and 15.3 per cent in ureterostomy or nephrostomy. Hepler, quoted by Ingersoll and Meigs,[1m] reported a 3 per cent death rate in ureteral ligation, while in 24 per cent, fistula developed and 15 per cent ultimately required nephrectomy. Peacock [1x] found that death occurred in 25 per cent of patients subjected to ureteral ligation. The literature indicates a 1 to 3 per cent incidence of ureteral injury in pelvic surgery. Unilateral injury occurs six times more commonly than bilateral.

This report is intended to present a definite plan of action particularly for general surgeons, gynecologists and general practitioners rather than urologists, who should know how to avoid and repair ureteral injuries.

CLINICAL MATERIAL

Twenty-four of the 26 patients with injury to one or more ureters during open surgery in the pelvis are presented for study. Injuries to 17 occurred during genital surgery. Of these operations, six (35.2 per cent) were performed by qualified gynecologists; five (29.6 per cent) were performed by excellent general surgeons, and the rest were done by general prac-

Because of lack of space, bibliographical references are omitted from THE JOURNAL; however, they are included in the authors' reprints.

Read before the Section on Urology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

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titioners. The diseases indicating the surgical intervention were of the usual nature. Six patients had total and five had subtotal hysterectomies. One of the latter had presacral neurectomy as well. Five had adnexal operations only. Vesical diverticulectomy by a qualified urologist required intentional division of one ureter. Involvement of the ureter in the disease demanded resections in the course of one radical hysterectomy and in one colon resection for endometriosis. The general surgical operations included four abdominoperineal resections of the rectum for carcinoma and two resections of the colon, one for endometriosis and one for diverticulitis.

Five patients had bilateral and 19 had unilateral injury, but two of the latter presented injury to each of congenitally duplicated ureters. The average age of those suffering from gynecologic diseases was 38.9 years, while the mean age for the others was 60.5 years. The types of injury encountered included ligation, division, excision, displacement with angulation, suture through ureter, running suture through ureter and sutures through duplicated ureters. Injuries were recognized at operation in 37.4 per cent of the patients, later in the hospital in 37.4 per cent and in 25.2 per cent after leaving the hospital. Locations of the injuries varied from intramural to 15 cm. above the bladder but mainly were at or below the pelvic brim. Only two patients had prophylactic ureteral catheterization before operation, a procedure that preserved the continuity of the ligated ureter until the catgut absorbed.

TREATMENT

The possible procedures in ureteral repair are (1) prophylactic preoperative urologic study with ureteral indwelling catheters and postoperative excretory urography in patients with suspected ureteral injury; (2) tube ureterostomy in desperate situations; (3) ureterovesical reimplantation if distal segment is irreparably damaged; (4) uretero-ureteral anastomosis if both segments are undamaged; (5) ureterosigmoidostomy if distal segment is damaged and site of injury is high; (6) immediate simple repair of incision or deligation; (7) simple extraperitoneal drainage after study if injury requires no revision and extravasation is present; (8) study, observation, antiseptics, ureteral dilation if continuity is preserved and extravasation is unimportant; (9) inlying ureteral catheter with or without extraperitoneal drain it obstruction or extravasation is present; (10) nephrostomy only if patient's condition is good and long diversion is necessary; (11) nephrectomy only after other measures have failed; (12) contra-uretero-ureteral anastomosis, which is not generally applicable but has been used on special indication; (13) vesical flap reconstruction of distal segment in special situations and after study; (14) ligation of the cut ureter; (15) uretero-cutaneous anastomosis, and (16) immediate deligation in anuria. The last three are mentioned only to condemn their use.

The principles applicable in successful control and restoration of the patient with injury to the ureter are (1) prophylaxis before and after operation; (2) early recognition of the injury; (3) preservation of kidney substance; (4) preservation of continuity of the urinary tract; (5) splinting of the injured ureter for adequate time (three to six weeks); (6) temporary diversion of the urine from the site or repair (i. e., ureterostomy); (7) extraperitoneal drainage of the injured area, and (8) long postoperative cystoscopic observation. The factors that vary the application of the principles include time of recognition relative to operation (in the hospital or after discharge), unilateral or bilateral injury, type and extent of injury, location of injury, condition of the patient and of the opposite kidney and presence of nonabsorbable sutures and ligatures.

The best treatment is prevention with preoperative urologic study and placement of inlying ureteral catheters, which are innocuous, permit quick isolation of displaced ureters and rapid, accurate delineation during the dissection. This requires cooperative urologists willing to perform the procedure at low cost to the patient for the good of the profession. The study can be readily done in the operating room after the anesthetic has been given. Indigo carmine should be given five minutes before cystourethroscopy. The urethra and bladder should be carefully inspected, with special search for extra ureteral orifices and observation of the concentration of the indigo carmine spurting from each ureter. Specimens of urine from the bladder and each kidney should be sent to the laboratory. If possible, no. 6 French ureteral catheters should be placed. These should be secured by taping to a no. 18 French Foley catheter (fig. 1). The ureteral catheters should be carefully identified as to lateralization. On completion of the operation, the surgeon should personally remove the ureteral catheters. If resistance is encountered on withdrawal, the ureteral catheters should be left indwelling until further observation proves the integrity of the ureters. Postoperative prophylaxis demands prompt excretory urography in any doubtful situation.

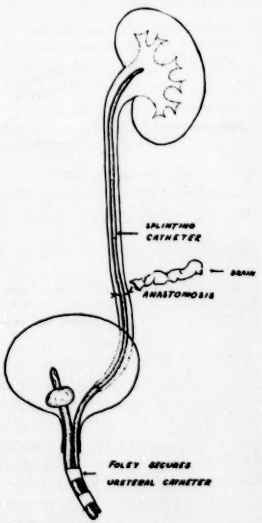

Fig. 1.—End to end uretero-ureteral anastomosis. Ureteral catheter acts as splint and urinary diverting instrument.

We recommend the following procedures as being the most widely applicable and satisfactory in repairing unilateral or bilateral injuries recognized in the operating room: (1) simple deligation or repair of ureteral incision, with or without indwelling catheter but with extraperitoneal drainage; (2) end to end uretero-ureteral anastomosis, with splinting, diversion of urine

and extraperitoneal drainage; (3) ureteroneocystostomy, with splinting, extraperitoneal drainage and possibly diversion; (4) in an emergency and if one is in doubt, extraperitoneal tube-type cutaneous ureterostomy with drainage, and (5) ureterosigmoidostomy. The surgeon must follow the principles outlined, realize that the technic is simple, the materials uncomplicated and that the services of a urologist are not necessarily needed. Level thinking and avoidance of panic are paramount. In most situations the basic materials needed include only no. 8 French urethral catheters or small Dakin tubing, Penrose drain and fine catgut on curved intestinal needle. No operating room is without such basic material.

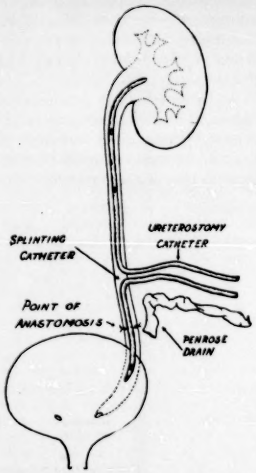

Fig. 2.—End to end uretero-ureteral anastomosis. Ureterostomy catheter and splint are placed through proximal ureterotomy. The wound is drained extraperitoneally.

TECHNIC

End to End Uretero-Ureteral Anastomosis with Splint and Ureterostomy Catheters Placed Through Proximal Ureterostomy.—The technic of this repair (fig. 2) demonstrates the methods and principles in the management of most injuries. Both ureteral segments are mobilized without stripping the adventitia to gain length and avoid tension. The cut ends are freshened by cutting obliquely if necessary. Three or 4 cm. above the anastomosis site, a short ureterotomy is performed over a catheter. Through this, a fenestrated urethral catheter (no. 6-12 French) is passed into the kidney pelvis. A second urethral catheter is passed through the ureterostomy downward through the anastomosis and into the bladder. The posterior peritoneum is mobilized. A stab wound at a suitable site is made to enter the retroperitoneal space. Through this are withdrawn the splinting and ureterostomy catheters and a Penrose drain. These are secured to the skin with silk. The ureteral ends are sutured together using 00 to 0000 chromic catgut on an atraumatic curved intestinal needle. Two to four simple stitches complete the anastomosis. None should pierce the mucosa. There is no attempt to make the union water-tight. The posterior peritoneum is closed, and the repair is complete.

This method does not require the aid of a urologist. It allows the surgeon to control the kidney and its injured ureter from above. It eliminates bladder irritation, which can cause premature expulsion of a transurethrally placed ureteral catheter splint and drain. At any time the integrity of the urinary tract can be determined by injection of a radiopaque fluid through either the splint or ureterostomy catheter (fig. 3). If it is desired, the splinting catheter can be drawn out through the urethra cystoscopically. A silk suture is placed, and then the catheter can be drawn above the anastomosis level, a ureterogram obtained and the splint replaced by traction on the silk suture, which is then detached.

The postoperative care is important. Careful attention is given to insure a large fluid intake, low p_H of the urine, low calcium intake and administration of suitable urinary and general antiseptics. The diversion and splinting should be maintained for at least three weeks as in pyeloureteroplasty. After this time the state of the anastomosis is determined by roentgenogram. If all is healed, the splint is removed first, and the ureterostomy catheter is taken out 24 hours later. The Penrose drain is never removed before the tenth day after repair. The repaired ureter should be visualized by a ureterogram two or three weeks after the patient leaves the hospital. Dilatation is accomplished at the same time, and the procedure should be repeated thereafter at increasing intervals until it is shown that no stricture will develop. A minimum of one year of observation is deemed absolutely necessary.

Variations of this basic technic are possible. In figure 1 a ureteral catheter placed cystoscopically and maintained in position by attachment to an indwelling Foley vesical catheter acts as splint and urinary diversionary catheter. The cystoscopically placed ureteral catheter may act as the splint, while a ureterostomy catheter diverts the urine from the site of anastomosis. Penrose extraperitoneal drainage is established in both variations. Both have the disadvantages of requiring urologic aid, the discomfort to the patient in having a urethral catheter in the bladder and the ever present danger of expulsion of the ureteral catheter splint-drain by an irritable bladder.

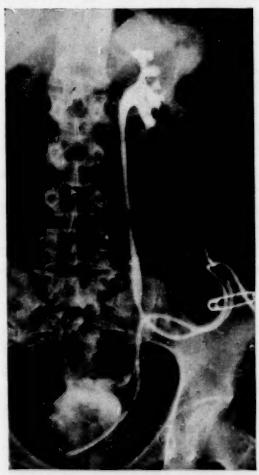

Fig. 3.—End to end uretero-ureteral anastomosis. Ureterostomy catheter and splint are placed through proximal ureterotomy. The wound is drained extraperitoneally. Roentgenogram reveals ureterovaginal fistula. Subsequent results were excellent.

Tube Ureterostomy. — This procedure is illustrated in two variations in figures 4 and 5. If the surgeon is in doubt, the situation desperate, or if the distal end is lost or destroyed, a urethral catheter placed in the proximal segment and exteriorized extraperitoneally will save the proximal ureter and kidney for later study and definitive repair. Anuria due to bilateral injury

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demands the insertion of a ureteral catheter in the middle one third of the ureter bilaterally and extraperitoneally. The approach is made through a muscle-splitting incision as in ureterolithotomy. A ureterotomy is performed, and a suitable urethral catheter is placed in the kidney pelvis.

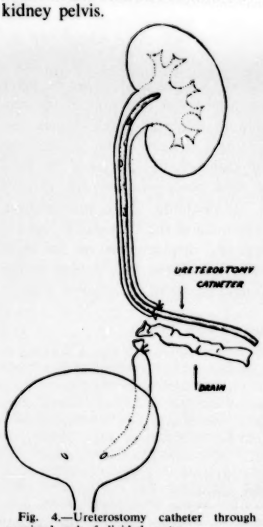

Fig. 4.—Ureterostomy catheter through proximal end of divided ureter.

Ureterosigmoidostomy. — This is indicated, if the distal ureter is badly damaged and the proximal segment is too short for ureteroneocystostomy and if the situation permits definite management. If the distal segment cannot be identified, it is best to have cystoscopic identification before transplantation of the ureter to the bowel. If the proximal ureteral end is at or above the pelvic brim or 5 to 7 cm. from the bladder, implantation in the bladder may be impossible. The anatomic relationships in the patient will decide this. The Coffey I or II technics are recommended. If the latter is employed, the ureteral catheter is placed in the renal pelvis, while the external end is placed in a no. 18 French urethral catheter. The latter is then passed into the rectum for withdrawal by an assistant. The usual tunnel method for securing the ureter to the bowel is then completed.

Ureteroneocystostomy.—This is preferred, if the distal ureter does not permit end to end anastomosis and if the proximal ureter will reach the bladder without tension (fig. 6). The ureter and bladder should be mobilized for elimination of all tension. If possible, the junction should be made low in the bladder, but if this would cause tension, any site is preferable. The ureteral end is split for a distance of about 1 cm. Atraumatic 00 or 0000 chromic sutures are placed in each flap of the ureter. A standard ureteral catheter or a rubber ureteral catheter is placed up to the kidney pelvis. The bladder is then opened adequately above the site selected for anastomosis, and a stab incision is made at that point. The ureteral sutures, catheter and ureter are drawn through. The ureteral catheter is attached to a urethral catheter, which has been placed by an assistant, and both are withdrawn through the urethra. The ureteral flaps are then sutured to the bladder wall either directly or by passing the flap sutures through the bladder wall, with the tying of each outside of the bladder. If it is possible, a tunnel of bladder wall is made over the anastomosis. In any case the bladder wall should be secured as best as possible to the ureter from without. The bladder is then closed in two layers with running 00 chromic catgut sutures. A Penrose drain is brought out extraperitoneally. Diversion of the urine by the ureterostomy catheter above the anastomosis is unnecessary in this operation. The ureteral catheter acts as a splint for the anastomosis and a drain for the kidney. It should be left in place for 10 to 14 days or longer. It is maintained in position by securing it to an indwelling no. 18 French Foley urethral catheter.

SPECIAL SITUATIONS

Injuries to both ureters with anuria recognized late require bilateral simultaneous tube ureterostomy. Unilateral obstruction, recognized late, requires immediate tube ureterostomy to save the kidney and allow the patient to recover for definite study and repair (fig. 5). In either situation, if deligation is to be attempted, it should be done as soon as the patient's condition permits in order to avoid the inevitable scarring at the site of the ligation. Attempts at definitive repair in ill patients cause mortality. Unless the patient's condition is unusually good, one should always divert the urine and drain to permit recovery before repair.

Injuries to one or both ureters without anuria, discovered early or late, require careful study and preservation of function by one of the usual methods (indwelling catheter, ureteral dilation, ureterostomy or nephrostomy) until repair can be completed. If it is discovered very late, nothing but nephrectomy may be possible. However, experience seems to indicate that there is hope for recovery of the function of a kidney that has been blocked two to four weeks. If the injury is accompanied by fistula, the first principle is to preserve function until proper study indicates the type of management. In many, such a course will permit spontaneous healing of the fistula.

Fig. 5.—Ureteral ligation during cesarean section. Patient became desperately ill. Ureterostomy catheter is placed through ureterostoma in middle one third. Ureteroneocystostomy was performed later. Perfect results were obtained.

In an injury without obstruction or division but with extravasation, simple extraperitoneal drainage with or without a ureteral catheter splint will suffice. If the injury is small and the extravasation minor, observation and the use of antiseptics may be sufficient in experienced hands.

Elective nephrostomy is wise if a long period of waiting is necessary before repair. It is unwise in the desperately ill patient, as tube ureterostomy is much less shocking and hence carries a lower mortality rate. Nephrectomy should never be done as a solution to an emergency on a patient with a ureteral injury. Late discovery of the injury may require the removal of the destroyed kidney.

Contra-uretero-ureteral anastomosis implies junction of the injured ureter to its intact mate, employing the usual principles and technic. We have had no experience with the method. Only five instances of its use could be found in the literature. It might be preferable to ureterosigmoidostomy in the high injuries. However, the chance of causing injury to the normal opposite side in the course of the anastomosis cannot be ignored.

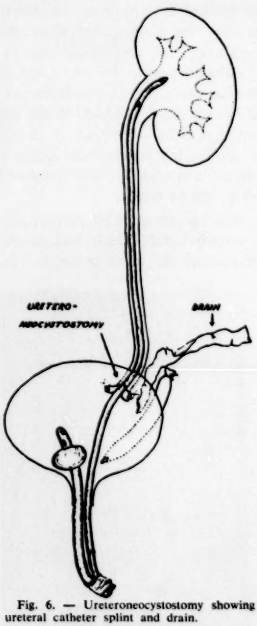

Fig. 6. — Ureteroneocystostomy showing ureteral catheter splint and drain.

The vesical flap method of lower ureteral reconstruction should be reserved for deliberate execution after proper study and evaluation. It is not satisfactory for definitive repair when the injury is found at operation because of the extent of the operative procedure necessary. However, in properly selected patients in whom ureteroneocystostomy is impossible and ureterosigmoidostomy is undesirable, it should prove useful. We have had no personal experience with the method.

Ligation of the cut ureter should never be done. It solves nothing and frequently causes disaster. Ureterocutaneous implantation is never necessary in an emergency. If ureterostomy is desired, the tube type is preferable because it is faster and simpler of execution, and it does not disturb the proximal ureter or its blood supply.

In general, deligation of both ureters immediately on discovery of the anuria should be condemned because of the high mortality. However, in certain situations, with the services of a urologist it is practical and safe. If the discovery is early, if the patient is in good condition without ileus and if his primary operation was not too extensive, deligation is safe. The urologist should pass ureteral catheters to help in the identification of the offending sutures during the operation. After the obstruction is relieved, the catheters should be left indwelling for one to two weeks.

RESULTS

The percentile calculations are based on individual patients, although six patients had injuries to two ureters, one patient had two procedures secondary to one injured ureter and one had injury to three ureters. Five of the procedures of repair were done by others, but one was under our direction. All came under our observation and control.

There were two deaths (8.4 per cent). One occurred two years after abdominoperineal resection of the rectum, from uremia due to bilateral pyonephrosis secondary to bilateral ureteral stricture. The patient was seen late, and ureteral catheters did not alter the fatal outcome. The other died postoperatively of urinary suppression due to sulfonamide drug intoxication, despite the usual treatment and the indwelling ureteral catheters used to overcome displacement on the right and angulation with stricture on the left. Neither of the deaths was due to surgical repair of the injured ureters.

Treatment and Results

Treatment	Results		
	Good	Fair	Fatal
Late nephrectomy	3	..	..
Bilateral deligation, 48 hr.	1	..	..
Tube ureterostomy	1	..	..
Deligation, splint, drain	2	..	..
Deligation and drain	1	..	..
Uretero-ureteral with splint and drain	3	..	..
Uretero-ureteral with splint, ureterostomy and drain	2	..	..
Ureterovesical transplant	2	2	..
Ureterosigmoidostomy	1	..	..
Preoperative indwelling catheter, left	1	1	..
Ligation ureter and drain	1	..	..
Indwelling catheter, bilateral	..	..	2
No treatment *	..	..	..

* Three patients received no treatment.

Sixteen patients (66.6 per cent) achieved good results. Three patients (12.5 per cent) received fair results. Three patients (12.5 per cent) received no treatment for various reasons. In the first patient, the ureteral obstruction was asymptomatic; the second patient had an asymptomatic ureteral obstruction associated with a double kidney, and the third had unilateral stricture due to angulation after abdominoperineal resection of the rectum for cancer. She failed to return for the dilation advised. Another of the group had repair of one ureter, while the ligated mate was left untouched. The table lists the results by procedure.

SUMMARY AND CONCLUSION

A brief review of the literature is presented. Our experience with 26 patients suffering from injury to 32 ureters is discussed. Principles, methods, technics and critical opinions are presented. One would conclude that surgical ureteral injury is a serious complication in the hands of the experienced as well as the novice surgeon. However, adherence to the principles outlined above, with level thinking, average technical skill and ordinary operating room equipment, will save many kidneys and many lives.

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BILATERAL INTRAMURAL STRICTURES OF THE URETERS AFTER TRANSURETHRAL RESECTION OF THE PROSTATE

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Of the complications occurring after transurethral electroresection of the prostate, I have seen no mention of bilateral narrowing of the intramural portion of the ureters. Scarring and fibrosis apparently occur occasionally after removal of the prostate with the cutting current, and the true condition may be overlooked. This report is made to call attention to this serious condition and to suggest early diagnosis and adequate treatment.

On July 9, 1948, a patient with carcinoma of the prostate, who had had four previous transurethral resections during a period of six years, had a sudden occlusion of the right ureteral orifice. All attempts at dilating or catheterizing this ureter were unsuccessful because of apparent fibrous constriction and not because of carcinomatous involvement of this area. This patient, who had been on estrogen therapy for six years, continued in good health although there were complete closure of the right ureter and no apparent renal function. However, on April 16, 1949, he returned with sudden and complete anuria but without any palpable evidence of activity of the carcinoma of the prostate. Three attempts at cystoscopic dilatation or catheterization of the left ureter were unsuccessful because of narrowing of the lower 5 cm. of the left ureter. On April 23, 1949, after one week of almost complete anuria, the blood nonprotein nitrogen was 110 mg. and the creatinine 7.5 mg. The patient had no pain or other local or general complaints. Operation was performed, and the left ureter was mobilized through a Gibson incision and found to be distinctly dilated down to the intramural portion of the bladder. After the lower end of the ureter was opened, a sound was forced through the mucosa into the bladder with great difficulty, and a T tube was inserted in such a way that one limb of the tube projected along the ureter into the bladder cavity. After this procedure the patient recovered rapidly and gained in weight, strength and appetite. The T tube was removed on June 15, 1949. At this time the patient's nonprotein nitrogen was 66.0 mg. and the creatinine 5.2 mg. There was no roentgenographic evidence of any metastatic lesion from carcinoma of the prostate in the bony pelvis or lumbar spine. Bone marrow studies were negative for carcinoma cells. The urine became clear. He returned to his work and was active, with good appetite, no pain and normal urinary function until Dec. 26, 1949, at which time he reentered the hospital. At this time he complained of loss of weight and some pain in the region of the right hip and groin since Dec. 10, 1949. On admission the nonprotein nitrogen was 50.5 mg. and creatinine 5.0 mg., and carbon dioxide-combining power was 39 volumes per cent. On Dec. 27, 1949, the nonprotein nitrogen was 161.5 mg. and the creatinine was 7.6 mg. The patient died on Dec. 30, 1949. Careful autopsy studies of the bladder wall, lower ureters and trigone did not show evidence of carcinomatous involvement of these areas but did show an atresia and stricture of the entire lower end of the right ureter with hydroureter, hydronephrosis and functionless kidney on the right side and fibrosis and scarring of the intramural portion of the ureter on the left. The left kidney was the seat of chronic pyelonephritis, and the patient died as a result of renal insufficiency.

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Read before the Section on Urology at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 28, 1950.

This observation brought to mind the fact that on a number of previous occasions I had been greatly puzzled at the clinical course of patients who had appeared to be in a satisfactory status quo while on estrogen therapy or after castration for carcinoma of the prostate. In these patients evidence of renal insufficiency and urinary infection suddenly developed, and they progressed rapidly to a death which I had previously ascribed to carcinoma rather than to obstructive uropathy. The two cases described below illustrate the occurrence of this problem after electroresection for benign prostatic obstruction.

REPORT OF CASES

CASE 1.—I. L., aged 66, was seen on Oct. 24, 1949, complaining of frequency of urination, persistent pyuria, recurrent chills and fever. A complete urologic examination showed that this patient had had an apparently satisfactory transurethral resection done elsewhere eight months previously. He had no complaint of bladder function since he had a free stream and believed that he emptied his bladder completely. This fact was verified by numerous examinations and by cystoscopic examination on two occasions, which showed no obstructing tissue at the vesical neck but revealed that the trigone also had been largely resected. It was impossible to identify either ureteral orifice even after the intravenous injection of indigo carmine. The repeated urine cultures showed a pure growth of Escherichia coli. An excretion urogram (fig. 1) showed large dilated ureters with dilatation of both renal pelves and calyces with the point of obstruction apparently at the ureteral orifice of the bladder on either side. At a later cystoscopic examination after repeated irrigation of the bladder, the right ureteral orifice was identified, and a no. 4 French catheter was passed for a distance of 10 cm. About 15 cc. of thick cloudy urine was evacuated on suction. After another intravenous injection of indigo carmine, a moderate amount of dye was

Fig. 1 (case 1).—Excretion urogram showing pronounced bilateral pyelectasis with bilateral obstruction of the intramural portion of the ureter (Oct. 24, 1949).

present in the urine from the right kidney, but none could be seen spurting from the left ureteral orifice. A complete analysis of this situation seemed to indicate that a transurethral resection of a benign prostate had been carried far backward into the bladder and that the resultant scar had interfered with the drainage from either ureter. The indications seemed to be for some type of procedure that would restore ureteral drainage, and in this case reimplantation of the ureters into the bladder seemed indicated. The blood studies on this patient showed a nonprotein nitrogen of 20.5 mg., total protein of 6.04 Gm., albumin 3.25 Gm. and globulin 2.74 Gm. Attempts to clear the urine with various antibiotics were unsuccessful, and after observation of the patient for another week or 10 days, operation was agreed on. On Nov. 15, 1949, a suprapubic cystotomy was done, and the left ureter was isolated and, after careful dissection was ligated at the juxtavesical portion. The ureter was then transplanted as low down as possible on the left lateral wall of the bladder after spatulation of the lower end of this decidedly dilated ureter for a distance of 1.5 cm. (fig. 2). A no. 12 French rubber catheter was used as a splint for the anastomosis. The right ureteral orifice was then widely dilated instrumentally, but it was quite apparent that subsequent scar tissue would probably cause closure again so this was transplanted in a similar manner with the use of a no. 14 French soft rubber catheter as a splint. Both ureteral catheters were fastened to a suprapubic no. 34 French de Pezzer catheter and allowed to remain in place for three weeks. After this the ureteral and suprapubic catheters were removed, and an indwelling Foley urethral catheter was left in place for one week. The patient's urine was almost crystal clear during this period, and he was discharged on the twenty-eighth postoperative day, apparently greatly improved in general health. He has been observed frequently since that date. Several attacks of pyuria have responded to various antibiotics. In each exacerbation, the colon bacillus has been the invading organism. Three sets of postoperative intravenous urograms have been made, which show the right kidney to be functioning normally and with almost complete elimination of the previous pyelectasis (fig. 3). The left kidney is functioning only slightly better than before operation and still shows marked hydroureter, pyelectasis and calycectasis. The nonprotein nitrogen on May 4, 1950 was 24 mg. and creatinine 1.4 mg. It is my feeling that in this case the patient has been saved from an early death from bilateral renal insufficiency by recognition of this complication and application of reimplantation of the ureters into the bladder. What the future course of events will determine will be reported at a later date.

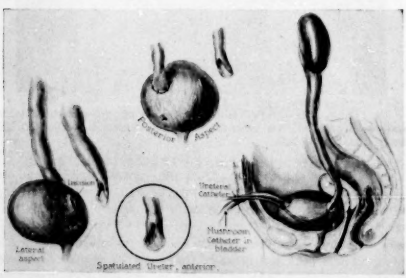

Fig. 2.—Transplant of ureters obstructed at ureterovesical junction.

CASE 2.—R. K., age 57, was first seen on Nov. 21, 1949. This patient had had a transurethral resection of a benign obstructing prostate four months previously at another hospital. His urinary function was excellent; he voided freely and believed that he was emptying his bladder. However, the patient complained of pronounced burning and pain on urination and persistent pyuria. The urine was creamy in consistency, and the culture showed a pure growth of Escherichia coli. Excretion urograms showed pronounced dilatation of the right superior major calyx with blunting of all the other calyces and dilatation of the right ureter down to the region of the trigone where it terminated in a spindle-shaped narrowing. The roentgenogram of the left side indicated moderate hydronephrosis with retention of the dye within the ureter, suggesting an obstruction at the ureterovesical junction. The condition was similar to that seen in the previously reported patient, so cystoscopic examination was done, and on three occasions

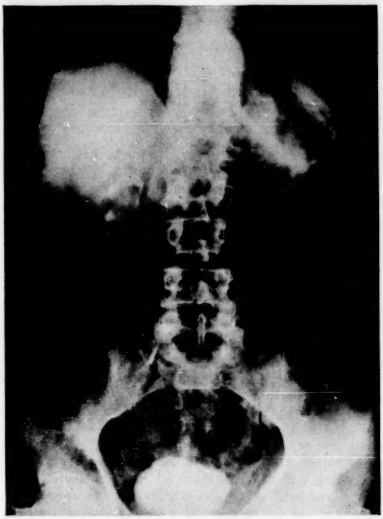

Fig. 3 (case 1).—Excretion urogram showing essentially normal right renal pelvis and ureter and slight mechanical improvement of the left urinary tree seven months after bilateral reimplantation of the ureters (May 4, 1950).

attempts were made to catheterize the ureteral orifices without success (fig. 4). In this patient both orifices could be identified after the intravenous injection of indigo carmine, but passage of the smallest bougies was impossible because of the narrowing of the intramural portion of the ureter. The nonprotein nitrogen in this patient was 32 mg., the creatinine 1.5 mg. The urine was consistently turbid and yielded Escherichia coli on culture. Nothing else of special interest was noted in the general physical examination. The patient was a well nourished, healthy man, who was greatly discouraged because of his recurrent attacks of fever, pyuria and dysuria. Operation was advised and accepted. Bilateral ureteral vesical reimplantation was done on either side after spatulation of the lower end of the ureter on the posterior aspect. These anastomoses were splinted with no. 14 French soft rubber catheters and were fastened to the suprapubic drain and brought out through the fundus of the bladder. After removal of the catheters on the twenty-first postoperative day, an indwelling urethral catheter was allowed to remain in place for five days, at which time the suprapubic wound was firmly healed. The urine was almost crystal clear although it still yielded a culture of Escherichia coli. The patient's appetite and general health were greatly improved. He left the hospital with normal urinary function, and nocturia had decreased from eight times to one time, with no frequency during the day. This patient left the city on a visit and in another locality had chills and fever and recurrent pyuria, which responded intermittently to courses of streptomycin, aureomycin hydrochloride and chloramphenicol (chloromycetin®). He returned for examination on April 26, 1950, at which time it was possible to catheterize both ureters without

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difficulty. The urine from the right kidney was cloudy and contained considerable pus and gave a pure culture of Escherichia coli. The urine from the left kidney was clear and negative to culture. The nonprotein nitrogen of the blood was 36.5 mg., creatinine 1.7 mg. Excretion urograms showed decided improvement in renal function and decrease in pyelectasis and calycectasis, especially on the right (fig. 5). After cystoscopic examination and the administration of aureomycin, the patient's urine became crystal clear on the third day. This patient is progressing satisfactorily for the time being. A subsequent report will be made.

The pyelograms in both of these cases are shown to illustrate the condition described both before and after bilateral ureteral reimplantation to the bladder.

CONCLUSIONS

The lower end of the ureter is being carefully studied in the clinic after transurethral resection for both benign prostatic obstruction and carcinoma of the prostate. It is suggested that occlusion of the lower end of one or both ureters due to the scarring, probably from the cutting or coagulating current, is a commoner post-resection complication than has heretofore been recognized. This preliminary report is made in the hope that, while my work is going on, others will recognize and treat this condition before the patients have undergone severe bilateral hydronephrosis and urinary infections, such as were present in the patients herein reported. Presumably, such a complication would not

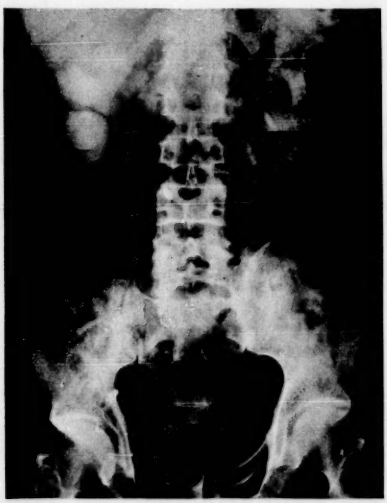

Fig. 4 (case 2).—Excretion urograms showing bilateral ureteral obstruction, pronounced calycectasis on the right, moderate dilatation on the left (Nov. 22, 1949).

follow the use of the cold punch unless coagulation to control hemorrhage was carried deeply and far enough back to involve the region of the intramural portion of the ureters. Recognition of this condition on my part has undoubtedly been long delayed, but I have been unable to find any reference to this complication in the literature. Bilateral reimplantation of the ureters into the bladder is not an ideal procedure, although the immediate results from mucosa to mucosa anastomosis after spatulation of the lower end of the ureter have been satisfactory at the time of this writing in the two patients described. Early recognition and treatment of this complication might obviate the necessity of such radical

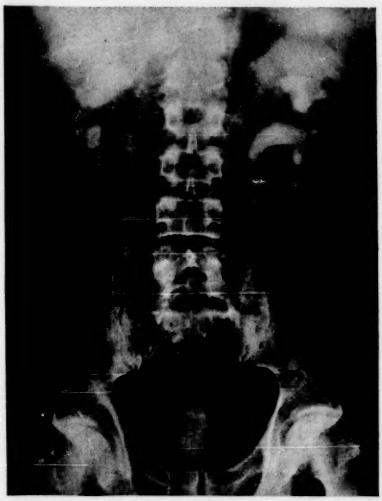

Fig. 5 (case 2).—Excretion urogram five months after bilateral reimplantation of the ureters, showing decided improvement in renal function and diminution of the calycectasis and ureterectasis, especially on the right (April 26, 1950).

operative procedure. In the patients reported, the procedures described were followed by pronounced symptomatic improvement, decrease in urinary infection and improved renal function for the time being at least.

720 North Michigan Avenue.

Quercus Suber.—Cork is the bark of the cork oak tree, *Quercus suber*, which is indigenous to countries that form the shores of the western Mediterranean. Portugal, Spain, France, and Italy in Europe and Algeria, and Morocco and Tunisia in Africa, are the cork-producing countries of the world. For more than 2,000 years all the cork for the world's commerce has come from different sections of these countries. The greater portion of the cork forests, which cover approximately an area the size of the state of Connecticut, a total of about 5,000,000 acres, is of natural origin. Here for centuries cork forests have withstood the ravages of wind, fire, war, and other destructive forces. Only in comparatively recent years has special attention been given to the care of these important areas . . . Cork oaks live for about one hundred and fifty years, although some trees have been known to survive for two hundred to three hundreds years and even longer . . . When the tree is about twenty years old, or 9 inches in diameter, the bark is ready for the first stripping . . . Within the past half century efforts have been made to grow the cork oak outside its native habitat. Success has been achieved in establishing a substantial number of cork trees in some countries, particularly in the United States, but only time will tell whether these new cork regions will result in the development of commercial plantings.—Giles B. Cooke, Cork, Bark of the Exotic Quercus Suber, *The Scientific Monthly*, March 1951.

TREATMENT OF TUBERCULOSIS OF THE LARYNX BY CHEMOTHERAPY

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George C. Turner, M.D.
Meyer R. Lichtenstein, M.D.
and
Henry C. Sweany, M.D., Chicago

Physicians treating tuberculosis appreciate the worsening of the patients' prognosis when the larynx becomes involved. The poor results of treatment heretofore are also well known.[1] Opinion would fluctuate between enthusiasm for some form of local treatment and a pessimistic outlook: the feeling that the only means of treating the larynx was by improvement in the pulmonary disease.

In 1946 Figi and Hinshaw [2] reported the beneficial effect of streptomycin in four cases of tuberculosis of the larynx. A number of studies [3] since then have confirmed their findings. As a result the treatment and prognosis of this disease have been completely revolutionized.

One hundred and twenty four patients with tuberculosis of the larynx treated with streptomycin and/or paraaminosalicylic acid (PAS) have been studied at the Hines Hospital and the Chicago Municipal Tuberculosis Sanitarium. Transfer, death or inadequate follow-up made critical evaluation impossible in many cases. Seventy patients who were seen before treatment, at intervals during therapy and afterward comprise the material for this study. Most of these patients had far advanced bilateral pulmonary tuberculosis with cavitation.

The diagnosis of tuberculosis of the larynx was made by the following means: (1) the history of throat complaints such as hoarseness, dysphagia, dryness or burning pain in the presence of proven active pulmonary tuberculosis, (2) the appearance of the larynx as seen by mirror examination and (3) in questionable cases, biopsy. The definitive diagnosis by biopsy was the exception. It is realized that there may be errors in the diagnosis of laryngeal disease made only by history and mirror examination.

TREATMENT

In this series of cases the patient was seen by the Therapy Board after the diagnosis of tuberculous laryngitis had been made. Included on this board were a surgeon, a radiologist and a chest physician. They determined the dosage and period of administration. Some of the earlier patients were treated with 2 Gm. of streptomycin per 24 hours for 120 days. In 79.2 per cent of all the patients treated for any form of tuberculosis who received this dosage indications of toxic effect on the vestibular apparatus developed.[4] Later the dose was reduced to 1 Gm., then to 0.5 Gm. a day for 60 days. At present dihydrostreptomycin in a dosage of 0.75 Gm. a day for 60 days is the usual regimen. No attempt was made to compare the relative effectiveness of these different dosages. The smaller dosage has been found effective and rarely causes vestibular symptoms.[5] Paraaminosalicylic acid was given orally in doses of 12 Gm. a day for 120 days. Some of the patients given paraaminosalicylic acid had streptomycin previously. Their laryngeal disease relapsed or developed after streptomycin therapy. No local treatment of the larynx was given. All of the patients were advised to stop smoking and rest the voice completely; however, it is doubtful if either was done conscientiously enough to be of benefit.

RESULTS

The effect of these drugs was evaluated by noting the improvement in the subjective symptoms and in the mirror appearance of the larynx.

Subjective Complaints.—Thirty-nine of the 70 patients complained of pain. This varied from a mild discomfort to such a severe dysphagia that even fluids were taken with difficulty. Pain was completely relieved in all but two patients. Decrease of the pain was usually noted in from four to seven days before there was any objective evidence of healing. This prompt and complete relief of pain was one of the most gratifying features of treatment. Hoarseness was a more intangible symptom, not easy to evaluate and record. The patient often felt that his voice was improved, but it was difficult to compare his voice before and after treatment. Hoarseness was noted in all but five individuals. On the basis of their statements, there was improvement in all but six. In 41 the improvement ranged from a marked to a complete return of the normal voice.

Objective Improvement.—The results of treatment as determined by objective improvement are summarized in figure 1. In three patients the laryngeal disease was seen to progress while being treated. In two the appearance was unchanged after a course of streptomycin. Improvement was slight in five patients, moderate in 23, and 37 had marked to complete healing. The most spectacular results were seen in ulcerations and granulations (figs. 2 and 3). In three instances of true tuberculoma all symptoms quickly disappeared after administration of streptomycin. Beneficial effects were less marked when

Read before the Section on Diseases of the Chest at the Ninety-Ninth Annual Session of the American Medical Association, San Francisco, June 29, 1950.

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This investigation was supported in part by a research grant from the Division of Research Grants and Fellowships of the National Institute of Health, U. S. Public Health Service.

Sponsored by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

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the only gross pathology was infiltration and hyperemia. In general, it seemed the more marked the involvement the more dramatic the improvement. When healing occurred, it was noted promptly, indicating the effect was local on the disease in the larynx rather than due to improvement in the pulmonary condition. Little correlation could be made out between improvement in the chest and the effect on the larynx. Many who had the best results on their laryngeal disease had little or no clearing of their pulmonary lesions as determined by roentgenograms. In some patients the maximum benefit in the larynx was not reached at the termination of therapy, but the improvement would continue for a month or more after the drug was stopped.

COMMENT

The theoretical ideal treatment would completely relieve all of the subjective symptoms and restore the larynx to normal. This ideal was actually realized in some of the patients in whom the larynx appeared normal for a tuberculous individual with a chronic cough. In

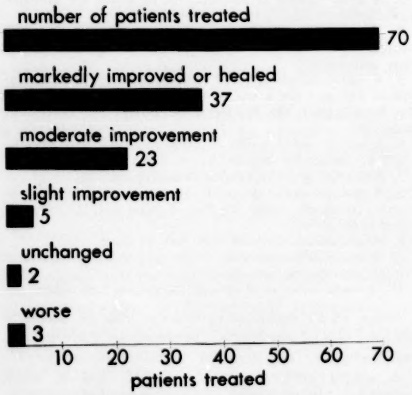

Fig. 1.—Results of treatment of tuberculosis of the larynx by chemotherapy, based on objective changes seen by mirror laryngoscopy.

the majority of patients there was marked improvement in the subjective complaints and in the mirror appearance of the larynx but accompanied with some residual changes such as thickening and hyperemia. The terms healed, quiescent and inactive laryngeal tuberculosis seem appropriate for this type of larynx. Some of these patients have been observed for over two years after treatment with maintenance of improvement. In a number of others there has been a recurrence of activity in the laryngeal disease.

A second course of streptomycin never seemed to be as efficient as the first one. This could be explained by sensitivity studies which demonstrated the development of streptomycin resistant organisms. Of those patients given streptomycin 68.3 per cent were resistant at the completion of therapy. Significant resistance to paraaminosalicylic acid developed in only 9.1 per cent, or in one of the 11 tested. The results in recurrent disease were better when paraaminosalicylic acid was used. There would usually be marked improvement in the subjective complaints and the appearance of the larynx, similar to that resulting from the first course of streptomycin. With these drugs it is usually possible to minimize or remove the effect of the laryngeal complication on pulmonary tuberculosis. To use the vernacular, they

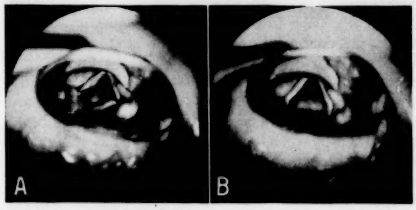

Fig. 2.—*A*, appearance of the larynx of a female patient with marked hoarseness for three months. Note the irregular infiltration of the posterior portion of the larynx, the arytenoids and the interarytenoid sulcus. *B*, after treatment with 12 Gm. of paraaminosalicylic acid (PAS) daily for 120 days. The voice returned to normal, the larynx appears normal.

"buy time": time in which the pulmonary disease may be brought under control by other means of therapy. Of course the patients' general condition will continue to be the most important factor. A healed larynx may regress if the pulmonary condition remains poor or deteriorates. Unless sputum conversion can be accomplished and the primary disease controlled, the final outcome will be the same.

In spite of this the palliative effect must not be underestimated. A number of these patients have succumbed to their pulmonary tuberculosis despite treatment with streptomycin. But even in the final stages before death most of them remained free from throat complaints, especially from the agonizing pain. Pain is one of the main factors for the worsened prognosis in laryngeal tuberculosis. It interferes with rest and causes dysphagia with resultant poor nutrition. The prompt and complete relief of pain in all but two of the patients in this series was one of the most satisfactory aspects of the treatment of advanced tuberculosis. This rapid relief of pain could be explained by the effect on secondary infection of an

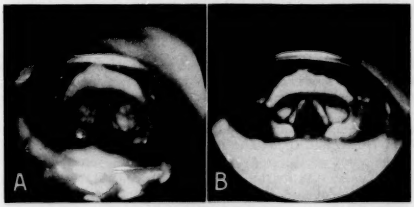

Fig. 3.—*A*, appearance of the larynx of a female patient with severe hoarseness for nine months, marked dyspnea for several weeks. Note the diffuse infiltration and granulations narrowing the glottis to a small chink. Tracheotomy done. *B*, after treatment with 0.75 Gm. streptomycin for 60 days. There is marked improvement in the appearance of the larynx, with a normal airway.

ulcerative lesion. However, the relief was just as great in those with nonulcerative disease, such as a swollen arytenoid and perichondritis. The disappearance of pain resulted in spectacular weight gains in some of the

patients; they had not been eating because of the odynphagia.

Only 14 patients in this series were given paraaminosalicylic acid. Because of this small number and the fact that many had streptomycin previously, no attempt was made to compare the relative efficacy of the two drugs. Streptomycin did seem to act more quickly and dramatically, while the result of paraaminosalicylic acid was slower but continued over a longer period of time. Some of this slower effect may have been due to its use in recurrent disease in patients whose general condition was deteriorating. The important fact is that paraaminosalicylic acid was effective after previous streptomycin therapy when the bacilli had become streptomycin resistant. Most patients with tuberculous laryngitis are now being treated with combined therapy of dihydrostreptomycin and paraaminosalicylic acid. It appears probable that this method will delay the development of resistant organisms and consequently permit the use of more prolonged and perhaps effective therapy.

SUMMARY AND CONCLUSIONS

This is a report of the results of treatment of 70 patients with laryngeal tuberculosis given streptomycin and/or paraaminosalicylic acid. All but two of 39 patients with pain were completely relieved. There was some improvement in the hoarseness in all but six; in 41 it ranged from a marked to a complete return of the normal voice. The disease progressed in three patients and remained unchanged in two others. Improvement was slight in five patients and moderate in 23; marked to complete healing occurred in 37.

Streptomycin and paraaminosalicylic acid have a marked beneficial local action on tuberculosis of the larynx. Their use represents the first real advance in therapy for this disease in many years. Paraaminosalicylic acid is especially valuable in patients whose organisms have become streptomycin resistant.

These drugs hold promise of arresting the laryngeal disease or of improving it enough so that the added handicap that this complication imposes is removed. The prognosis becomes that of the pulmonary condition alone, rather than the poorer one of pulmonary tuberculosis with laryngeal involvement.

Modern Trends in Biochemistry.—Perhaps the most significant attribute of modern biochemistry is the increasing documentation of the concept that, on the biochemical level, there is a striking unity among the manifold forms of living matter. A chemical process studied in a yeast culture may therefore illumine a comparable series of reactions in mammalian muscle; or the study of the respiratory pigments of invertebrates may provide basic data for the elucidation of a general mechanism of biological oxidation. Although there is much diversity in the chemical activities of different biological forms, it is becoming ever clearer that the fundamental biochemical reactions underlying cellular function exhibit a striking uniformity from the lowest to highest forms of life. The biochemistry of the present is, therefore, "general biochemistry." As a result, the modern biochemist must be catholic in his biological interests; he may wish to use as his biological material a micro-organism, or a plant, or slices of rat kidney, if he is led to believe that one of these will best serve his purpose in the study of a biochemical process.—Joseph S. Fruton, The Place of Biochemistry in the University, *The Yale Journal of Biology and Medicine*, February 1951.

"MULTIPHASIC" SCREENING TESTS

Wilson G. Smillie, M.D., New York

The extensive employment of mass methods for detection of tuberculosis, syphilis, diabetes and other diseases by official and voluntary health agencies has led quite logically to the idea that it might be advantageous to combine various diagnostic screening tests, instead of organizing separate campaigns, each with a single test. Thus, multiple screening proposes to provide a series of rapid, highly technical diagnostic facilities for large groups of adults, at low cost and, for the most part, at community expense.

Various types of tests have been suggested for inclusion in the screening unit. They are conducted in series.

1. Registration, chiefly for identification, is the first step, with a record of age, sex, marital status, weight and height. No detailed history is provided for.
2. The blood pressure, diastolic and systolic, is taken.
3. A urine sample is procured, to be tested for albumin, sugar, sediment and, perhaps, urobilinogen.
4. A small roentgenogram of the chest is made to detect tuberculosis, an enlarged heart, possible cancer of the lung and other pathology.
5. A blood sample is taken, part to be used in a test for syphilis and part for a test of blood sugar. Hemoglobin may also be estimated, the Rh factor determined and other tests made.
6. A test of visual acuity is given. Included, also, may be a test of intraocular tension for detection of glaucoma.
7. A test for acuity of hearing is carried out.
8. A test for early detection of cancer of the cervix in women, commonly called the Papanicolaou test, is frequently placed in the series.
9. Simple muscle function tests may be done.
10. Exercise tolerance tests, which give valuable additional information, may be included.
11. In some series an electrocardiogram has been taken.

Other simple technical procedures may be added to meet the special needs of a community as, for example, examination of the stool for intestinal parasites.

A simple uniform record is used, and in some instances a short history form is provided, covering questions that are related to symptoms that might indicate heart disease, tuberculosis, syphilis, diabetes, rheumatism, defects of eyesight or hearing or other disabilities.

It has been estimated that an examination of 1,000 adults should reveal a total of 27 to 47 cases of previously undetected serious pathological conditions, with specific incidence as follows:

Active tuberculosis	3 to 5
Active syphilis	3 to 5
Heart disease	10 to 15
Cancer	1 to 2
Diabetes	5 to 10
Other serious disease	5 to 10

All the work is done by skilled technicians. A physician does not enter the picture until all the tests have been completed and are ready for analysis. The clinic physician then goes over the data and makes a recommendation as to whether or not the person should be referred to his family physician or to a clinic for further

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study. If all tests are negative, the person is so notified, and thus he makes but one visit to the health center. If one or more of the tests are positive or even suggestive of pathology, the person is asked to return for further observation, with perhaps a medical interview.

The public health nurse does the follow-up work in the event of positive findings. She goes to the home, explains the results of the examinations and points out the necessity for further observation.

ADVANTAGE OF MULTIPHASIC SCREENING

This mass type of free multiple examinations is well received by the people. The per capita cost of the examination is very low. Many cases of important degenerative disease are uncovered that have not been detected previously, or even suspected. Many sick people may be brought under medical supervision, in whom, otherwise, advanced chronic disease might develop before the condition had been detected.

From an administrative point of view the mechanics of the plan are almost perfect. The tests are done rapidly in sequence, requiring perhaps 40 minutes of the patient's time. Each test can be done by a trained technician on an efficient basis, thus lowering costs and conserving physician time.

The tests are comprehensive, with no special emphasis on specific conditions and no appeal to "horror psychology." This averts the development of a phobia relating to cancer, tuberculosis or heart disease.

From the point of view of health education the plan has the advantage that the health department, which is the servant of the people, can create an active interest in this type of positive health service. This avenue of health education is not open to the practicing physician.

DISADVANTAGES OF MULTIPHASIC SCREENING

The plan has all the serious defects of other types of mass screening. These must be carefully weighed against its advantages.

Diagnostic tests should be selective. For example, one has little interest in the results of mass serological tests for syphilis in persons over 40 years of age. Syphilis is essentially a disease of young men and women in the lower economic and social groups. One should search for syphilis where one is likely to find it. The same is true of tuberculosis. A mass x-ray screening of the chests of children of school age is a complete waste of time and effort. It is clear also that mass tests for early detection of cancer in persons under 35 years of age is a futile procedure. In brief, diagnostic tests must be selective in order to be effective.

The screening tests in multiple screening are performed mechanically by technicians, who assemble the data, but who have no real contact with the "testee" (for one cannot, at this stage, call him a patient). It would be fortunate if adequate medical care could be conducted on a mechanistic basis. But one is dealing with a person, not a machine. Medical care requires a skilled observer who sees the man, not as a series of separate organs, one or more of which may or may not be diseased, but rather as a person who requires insight, sympathy, understanding and guidance.

It will be said that if we neglect to provide this service, a great many persons will suffer from want of adequate care. It is true that 900 out of each 1,000 persons tested under a multiphasic screening program are not under medical supervision. Most physicians have, in the past, been unwilling to meet their responsibilities in the field of preventive medicine. They have been trained to treat sick patients, not to give medical supervision to normal, presumably healthy, people. Furthermore, the general public has not been educated to request or to expect this type of service. Most persons are not willing to pay for it. Furthermore, many physicians are not aware of the necessary components of an adequate, comprehensive periodic health examination.

Nevertheless, the primary responsibility for this type of preventive service rests upon the practicing physician and not upon the health department. A series of diagnostic tests may be set up by the health department to which patients may be referred by the physicians, thus giving the physicians technical aid in interpretation of diagnostic problems. This is exactly the procedure that has been developed in sputum diagnosis for tuberculosis, examination of biopsy material in suspected cases of cancer and stool examinations for intestinal pathogens.

In other words, the individual should not go first to the health center for multiphasic screening tests and then be sent to his doctor. He should see his physician first and should be referred by his physician to the health center for the various diagnostic aids.

The great difficulty in multiphasic screening is that the interpretation of diagnostic tests is of little value without a knowledge of the history of the patient, an understanding of his personality and a familiarity with his whole family background.

Some 960 of the 1,000 persons who pass through the multiple screening tests emerge with negative results. This group is treated most unfairly. They have a false sense of security. They do not know that negative tests have little value. Even if it gives the correct answer, each test represents simply a profile of that special and selective function of the person at that particular moment. The tests are not intended, of course, to give the individual a rapid, cleancut and concise series of comprehensive diagnoses. But that is exactly what the average man thinks they do; otherwise he would not go through with the procedure.

One cannot minimize the great value of finding 30 or even 50 instances of undetected chronic disease in each 1,000 persons examined under multiphasic screening, with subsequent placement of these persons under proper medical guidance. But are we not more interested in the 960 persons who were sent cards indicating that their findings were negative? Why not devote a proportionate amount of community effort and public health department funds to get these persons under medical supervision, thus initiating a true preventive service that will be of fundamental aid to each and every individual in the early detection of manifestations of degenerative disease.

One is quite willing to promote a plan for establishment of technical diagnostic procedures that will aid and supplement the physician who has the responsibility for actual care of his patients. But a multiphasic diagnostic screening unit that is established as a primary public health diagnostic function is unsound in its concepts, untenable in its principles and indefensible in its logic.

MEDICINE, MOBILIZATION AND MANPOWER

Howard A. Rusk, M.D., New York

In the mobilization of the nation's material, human, spiritual and financial resources to meet the present emergency, it is readily apparent that the major factor of our success will be dependent on manpower. That a nation's strength lies in its manpower has been evident since Adam Smith advanced this thesis in his *Wealth of Nations* and the world turned from an agricultural to an industrial economy. It is a matter of simple arithmetic to see that today the North Atlantic Pact countries fall far short of their potential enemies in the gross numbers of men available for military service. On the basis of past performance in the last war, however, it seems obvious that our industrial power, when fully mobilized, can more than offset this numerical advantage. If the latest developments in science and engineering through research, coupled with mass production techniques, are to balance the scales in our favor, our nation must have sufficient skilled scientific manpower to make full use of our industrial potential. As the problems of health are fundamental to both military and industrial manpower, I will review three primary aspects of health manpower which have been the concern of the Health Resources Advisory Committee of the National Security Resources Board since my discussion last fall at the meeting of the Association of American Medical Colleges at Lake Placid.

ACTION OF FEDERAL AGENCIES

The first of these is a review of the steps that have been taken by the committee and those other agencies of the federal government that are concerned with health manpower and the effects of the withdrawal of physicians and other health personnel for military service on our civilian health economy.

The Health Resources Advisory Committee of the National Security Resources Board was established on Aug. 5, 1950, at the suggestion of the President to advise the Chairman of the National Security Resources Board and Health Resources Office of the Resources Board.[2] The members of this committee are Dr. Harold Diehl, Dr. Alan Gregg, Mrs. Ruth Kuehn, Dr. John B. Pastore, Dr. James C. Sargent, Dr. Leo J. Schoeny and Dr. William P. Shepard. The scope of activities of the committee have been to give advice and make recommendations in the entire field of health resources essential in a national emergency. Its primary activities have been in health manpower, health facilities and health supplies for medical, dental, pharmaceutical, nursing, environmental sanitation, veterinarian and allied services.

On October 4, the President designated the chairman and the members of the Health Resources Advisory Committee to be chairman and members of the National Advisory Committee to Selective Service on the Selection of Physicians, Dentists and Allied Specialists.[3] The committee was established as a result of Public Law 779 providing for the registration and drafting of physicians, dentists, veterinarians and allied specialist categories. This law stipulated that the President should establish a National Advisory Committee to advise the Selective Service System and "to coordinate the work of such state and local volunteer advisory committees as may be established to cooperate with the National Advisory Committee." [4]

Two days later, on October 6, a state advisory committee was appointed in each state by the national committee.[5] The nucleus of each of these state committees consisted of a physician chairman, a dentist and the state health officer. Each of these state committees had the authority to appoint additional members and to establish such subcommittees or regional committees as they desired. In January 1951, a two day meeting attended by all the nuclear committee members was held in Washington for the purpose of clarifying and interpreting the philosophy and policies for which they are responsible.[6]

Thus the Health Resources Advisory Committee serves also as the National Advisory Committee to Selective Service. This dual function is logical, as the consideration of health manpower resources and the drafting of health manpower for military service are inextricably bound together.

One of the most significant advances made recently in the coordination and planning of health manpower is the policy established on Dec. 22, 1950 by the Department of Defense whereby the Health Resources Advisory Committee is responsible for reviewing the over-all quotas of the Department of Defense for physicians, dentists and veterinarians. After each of the three military services has established its projected requirements, these are reviewed by the Armed Forces Medical Policy Council and Health Resources Advisory Committee, whose recommendations are then sent to the Secretary of Defense for final decision. Concurrently, after April 1, except for the members of the organized

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Read before the Council on Medical Education and Hospitals, American Medical Association, at the Forty-Seventh Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1951.

Chairman, Health Resources Advisory Committee, National Resources Board.

1. Deleted in proof.

2. Memorandum of the President to the Heads of Executive Departments and Agencies, Aug. 30, 1950.

3. Executive Order Establishing the National Advisory Committee on the Selection of Doctors, Dentists and Allied Specialists, Oct. 4, 1950.

4. P. L. 779, 81st Cong. 2d Sess., an amendment to the 1948 Selective Service Act, approved Sept. 9, 1950. Students of the Healing Arts, Local Board Bulletin 7, Selective Service System, Feb. 2, 1951. Reopening the Cases of Special Registrants, Operations Bulletin 10, Selective Service System, Oct. 26, 1950.

5. Information Bulletin, National Advisory Committee to the Selective Service System, vol. 1, Bulletin 1 (Nov. 17, 1950); Bulletin 2 (Nov. 28, 1950); Bulletin 3 (Jan. 19, 1951); Bulletin 4 (Jan. 31, 1951); Bulletin 5 (Feb. 1, 1951); Bulletin 6 (Feb. 2, 1951).

6. Unpublished proceedings of the National Meeting of State Advisory Members to the Selective Service System, January 1951.

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reserves, the names of all reserve medical and dental officers being recalled for active duty by the three military services will be submitted prior to the issuance of orders to the State Advisory Committees to the National Advisory Committee to Selective Service. The State Advisory Committees then determine the essentiality of the individual reserve officer to the health and welfare of his own community and either declare the individual available for military service or ask that his call-up to active duty be delayed because of essentiality. When a state committee declares a reserve officer as essential, but his specific training and experience is urgently needed by one of the military services, the services may appeal and the final decision as to the call-up will rest with the Secretary of Defense. It is anticipated that this will occur very rarely.

Other activities of the committee in recent months have been [7] (1) a review of the estimates of current and projected needs of each of the major governmental health agencies; (2) a study of estimates of minimum needs of health personnel to maintain essential civilian health services during a national emergency; (3) the development of informational data on the effect of Public Law 779 on hospital residency programs and on medical, dental and veterinary teaching programs; (4) consideration of the problems of the classification and recruiting of nurses and of their utilization in a national emergency; (5) review of the manuscript on civil defense health services and special weapons defense prepared by the Health Resources Office for the Civil Defense Office of the Resources Board [8]; (6) consideration of problems in the health education fields; (7) consideration of problems in military, veterans' and civilian hospitalization [9]; (8) consideration of problems in rehabilitation, especially as they pertain to industrial mobilization. The data obtained in these studies form the basis of the thinking of the committee on the second problem, that of insuring a sufficient flow of students into preprofessional and later professional training to meet both the military and civilian health needs of our nation.

INSURANCE OF SUFFICIENT SCIENTIFIC MANPOWER

As the Scientific Manpower Advisory Committee of the National Security Resources Board headed by Dr. Charles Allen Thomas has pointed out, scientific manpower is essential to our security.[10] Scientific manpower is needed by the military services for research, training, operations and maintenance in technological warfare. Industry must have scientific manpower for research relating to the design and development of products for both military and civilian use and for rapid translation of new weapons, materials and equipment into mass-produced finished products. Scientists are necessary for basic and applied research in industry, government, colleges and universities and in research institutes. Scientific manpower is essential for civilian activities in education, agriculture, public health, civil defense and public welfare.

Legislation now before Congress proposes that all physically fit youths reaching the age of 18 be given a period of four months' basic training.[11] On completion of this training they shall be liable for military service not to exceed 27 months including basic training. Those who have not graduated from high school would be deferred until graduation or age 19. The period of service would begin immediately for all except a limited number who would elect, qualify and then be placed on inactive duty for the Reserve Officers' Training Corps and the Reserve Specialists' Training Corps. The R. O. T. C. would provide for a continuous supply of trained officers for military service from all fields of education.

It is proposed that the Reserve Specialists' Training Corps would consist of 75,000 men selected annually for three years to provide a continuous flow of men to be trained in science, engineering, medicine and other critical fields essential to national strength. It is anticipated that after three years there would be a sufficient flow back into college of men who had completed their twenty-seventh month of service to meet future needs. Candidates for the R. S. T. C. would be selected by a board of educators, with both civilian and military representation on the basis of competitive examination adjusted by other indication of aptitude or attainment. It is believed that with the 75,000 men entering the R. S. T. C. each year, the 55,000 to 75,000 who might enter the R. O. T. C. each year, in addition to the veterans, those physically disqualified for service and women students, the nation's need for future scientific manpower could adequately be met.

As the four months' basic training and the time required for testing, screening and releasing trainees under the R. S. T. C. program could involve an interruption of the year or two of the flow of students through college, Dr. Thomas' committee has recommended that in addition to the R. O. T. C. candidates some 75,000 men with superior aptitude for college work in science, engineering and preprofessional health fields be deferred to enter college in September. It also recommended that a similar number now in their freshman year be deferred and that the military service of all students entering junior and senior classes in September be postponed until their graduation in 1952 and 1953, provided they continue in good standing in their college programs. In endorsing the proposals of the Thomas committee, the Health Resources Advisory Committee has estimated that the minimum number of graduates required annually to provide for the present civilian supply and the military requirements of the health professions is 19,350 in all categories.[12] Allowing for a 20 per cent attrition rate during college due to drop-outs and failures and a 10 per cent attrition rate during the professional school years, the committee estimates that to have 19,350 graduates each year in

7. Report, Health Resources Advisory Committee to the Chairman of the National Security Resources Board, Aug. 5-Dec. 31, 1950.
8. United States Civil Defense Health Services and Special Weapons Defense, Federal Civil Defense Administration, December 1950.
9. Report to the President, Committee on Veterans' Medical Services, Sept. 22, 1950. The Committee is composed of Dr. Howard A. Rusk, Rear Admiral Robert L. Dennison (USN), and Dr. Arthur S. Abramson.
10. Plans for the Development and Use of Scientific Manpower, The Scientific Manpower Advisory Committee, National Security Resources Board, Jan. 12, 1951.
11. S. 1, 82nd Cong., 1st Sess.
12. Testimony of the Health Resources Advisory Committee before the Senate Preparedness Subcommittee on S. 1.

the health fields it would be necessary to have 25,000 students start their preprofessional training annually.

On the basis of the fact that two-thirds of the physicians over 65 years of age are retired or are not actively engaged in practice, the Committee estimates that there are now 178,000 physicians actively engaged in their profession.[12] To provide even the present civilian supply and military requirements of physicians will require, according to the committee's estimates, the graduation annually of 7,500 physicians.[14]

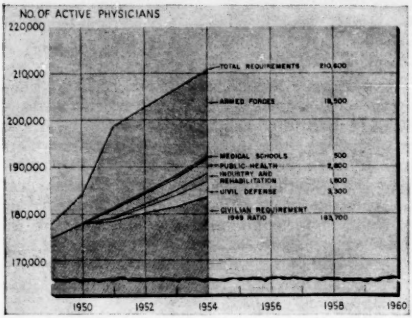

Chart 1.—Active physicians for specified civilian and mobilization requirements. Estimates for 1951-1954.

OVER-ALL NATIONAL NEEDS

The third problem studied by the committee is the over-all national needs for medical and health manpower during this period of national emergency. It is well remembered that during the last war physicians were required to take on longer hours of work, extra teaching duties, to shoulder the load normally carried by interns and residents in the hospitals—all in all, to carry a back-breaking load in many instances with tragic results to the health of the physician.[15] Looking ahead, one must assume that, for the next ten years, the nation may be in a state of partial or complete mobilization with an armed force of unprecedented size for peacetime and all the added burdens of our economy that are the inevitable sequelae of such an effort.

For purposes of planning, therefore, the committee has made three basic assumptions as to the nation's health needs. The first assumption is that the 1949 physician-population ratio and service should be maintained. Second, the additional requirements of civil defense, industry, public health services, rehabilitation services and staffing medical schools should be met. Third, the needs of the Armed Forces must be supplied.

The bottom line in chart 1 shows year by year from 1949 through 1954, the number of physicians that will be required to maintain the 1949 civilian standards, based on the ratio of the number of active civilian physicians to population in the year 1949.[16] The second line shows the projected additional needs for physicians for purposes of civil defense as estimated from confidential data: 600 additional men in 1951, increasing to 3,300 in 1954. The third line shows the projected additional needs for physicians in the expanding industrial mobilization and for industrial medical requirements and rehabilitation necessary for industrial expansion as the results of industrial utilization of increased numbers of women, physically handicapped and aged workers: 100 in 1951, increasing to a total of 1,800 in 1954. The fourth line shows the projected additional needs for physicians based on full staffing of local health departments and the added load thrown on the public health services in the expanding war economy: 1,600 in 1951, increasing to a total of 2,800 in 1954. The fifth line shows the projected additional needs for physicians to fill present vacancies in the essential teaching in the medical schools: a total of 500. The sixth line shows the projected additional needs for physicians required for the Armed Forces: 3,000 as of 1949, increasing to 17,500 for the authorized 3,500,000 troop strength in 1951, and increasing further to 18,500 in 1954 on the assumption of a possible troop strength of 5,000,000 by that date.

Since each of these categories has been superimposed in turn over the base line of those physicians estimated as being needed at the present rate of net gain over the years 1949 to 1954, a substantial deficit becomes apparent (chart 2). In chart 2 this total need has been compared with the supply of active physicians that can be expected in 1954 at the present level of training—6,000 graduates a year.[17]

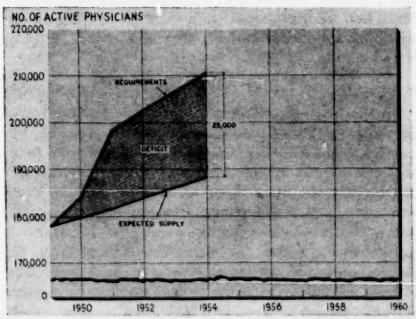

Chart 2.—Required active physicians and expected supply at present graduation level.

As near as it is possible to estimate, 22,000 physicians over and above those now in sight for the year 1954 will be required to maintain the present level of civilian medical services, to meet the special needs of industrial mobilization, to meet the minimum needs of an adequate civil defense program and to meet the projected needs of the Armed Forces based on a ratio

13. Dickinson, F. G.: Ages of Physicians in the United States, 1940 and 1948, J. A. M. A. **139**: 51 (Jan. 1) 1949.

14. Ciocco, A.; Davis, B. M., and Altman, I.: Measures of Medical Resources and Requirements, M. Care **3**: 314 (Nov.) 1943.

15. Barton, P.: Temporary Licensure of Physicians, in Papers Prepared for Annual Congress on Medical Education and Licensure, Feb. 12-13, 1945, Chicago, American Medical Association, 1945.

16. Siegel, J. S., and White, H. L.: Illustrative Projections of Population of United States, 1950-1960, Population Estimates, Series P-25, No. 43, United States Department of Commerce, Bureau of the Census, Aug. 10, 1950. Provisional Estimates of Population of Continental United States, Population Estimates, Series P-25, No. 45, United States Department of Commerce, Bureau of the Census, Oct. 13, 1950.

17. Medical Education in the United States and Canada: Fifteenth Annual Report of the Council on Medical Education and Hospitals of the American Medical Association, J. A. M. A. **144**: 109 (Sept. 9) 1950.

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of 3.7 per 1,000 troop strength, a figure substantially under that of World War II and also substantially below that presently prevailing.

It is at once apparent that a substantial deficit in medical manpower is already on us and this deficit is steadily increasing. Nothing is possible to avoid or even reduce this deficit before 1954. Whatever the demands, the present supply of physicians must meet all needs until then or as soon thereafter as the training of additional physicians not now in process of education can be completed.

If any one of the listed categories is to receive a complement equal to that indicated in these projected figures, it can be only at the cost of a decrease below present levels of those physicians committed to other categories. It must be made clear, therefore, that in the presentation of these figures of projected needs there is no attempt to indicate that it is presently possible to meet these projected figures in any category. For example, the projected figures of the Armed Forces indicating need of some five medical officers per 1,000

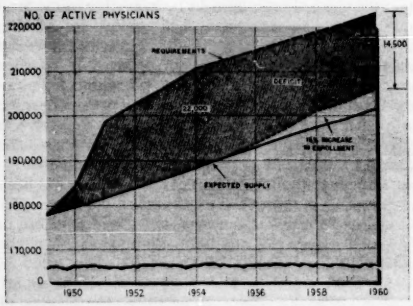

Chart 3.—Expected supply with 6,900 graduates a year from 1955.

troop strength in 1951 and gradually tapering off to 3.7 per 1,000 troop strength in 1954 does not indicate that the committee believes such a ratio is a permanent minimum necessity or that there are sufficient physicians available to supply these needs without serious disruption of other essential categories. Obviously the problems of utilization in the Armed Forces should be a matter of continuing study.

This deficit implies a serious threat to the health and welfare of our people. Our duty and our privilege as American physicians is to meet that threat to the civilian and military population. The problem is how. There are but two possibilities (chart 3). First, a straight increase in enrollment in the medical schools as shown by this chart is a possibility. The increase per class in the last war was 12.5 per cent.[18] As the chart indicates, even a 15 per cent increase over 1949 beginning next September would produce no increase in graduates for four years nor any increase in men who have finished a one year internship until June 1956 at the earliest. By the summer of 1960, increasing the size of classes by 15 per cent would produce only 5,000 out of the needed 22,000.

Some additional means of increase must be effected—some means that is prompt as well as substantial in its results. The second alternative is acceleration as shown in chart 4. Acceleration, despite all its known defects, appears to be the only logical solution. The effect of an accelerated program can be seen on the chart. It would

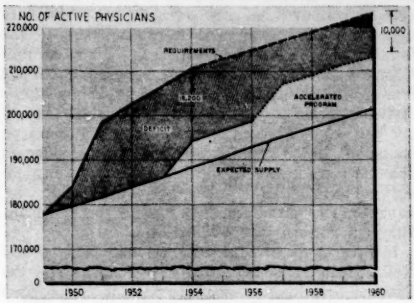

Chart 4.—Expected supply with immediate accelerated program.

produce an extra class nine months ahead of the usual and current schedule and an additional 6,000 physicians every three years. This would amount to 12,000 physicians by 1960. This is a net increase more than twice as great as that which would be produced by the enrollment increase alone. Acceleration would also start producing results at least two years earlier than can be obtained by enrollment increase alone. The difficulties of an accelerated program are recognized. The profession should, however, be able to profit by its experience in the last war. The depletion of teachers can be prevented. Students need not be disturbed by change in their student status. Internships could be extended rather than curtailed.

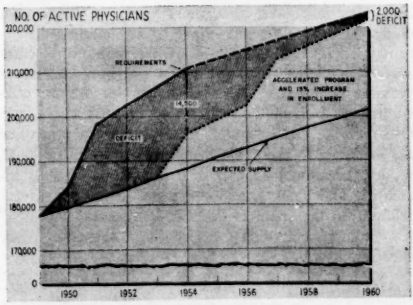

Chart 5.—Expected supply with immediate accelerated program and 6,900 graduates a class.

The remaining deficit is still too large even when both increased enrollment and acceleration are put into effect to reduce the gap shown in chart 5. The additional 20,000 physicians produced by acceleration and

18. Kimball, S.: in testimony before the Senate Committee on Military Procedures, on S. 1.

a 15 per cent enrollment increase do not close the gap entirely. Obviously and inescapably there will be a grave shortage of physicians during the next five years for the needs of a mobilized economy. Without acceleration and increased enrollment, the supply of physicians by 1954 would be short by 22,000. If national safety calls for the lives of our sons to be cast in a radically different pattern, if industry has set for itself the task of fundamental changes in order to produce the materials for our defense, in all fairness, we in the medical profession cannot insist on continuing our status quo in the face of medicine's inadequacy to the needs of a mobilized economy. The plans outlined are flexible. They do not impose a permanent oversupply of physicians on the nation. In the event that the international situation becomes more favorable, the increased tempo of training could readily be adjusted. The estimates are conservative. They do not even cover the expected deficits. They are not excessively demanding.

In light of these facts, it is the considered opinion of the Health Resources Advisory Committee of the National Security Resources Board that the program must be expanded and/or accelerated, or we will fail. We physicians cannot fail, for we are responsible for the health of the nation.

SUPPLY OF PHYSICIANS' SERVICES

Frank G. Dickinson, Ph.D., Chicago

Although I am proud and happy to serve the medical profession and through the profession, I trust, the people of our times, I can never quite forget that I have been trained in another field. This is one of the times when I envy the members of the medical profession. It would be so heartwarming for me to pick up a newspaper or a release from Washington stating that there was an alarming shortage of economists and statisticians. On reflection, however, I would probably conclude that someone was either trying to discredit my profession for having fallen down on the job or to compliment it highly. Economists are not now under any pressure to increase their numbers. Nor are we confronted with claims comparable to those made by Mr. Oscar Ewing that he could, if he were given control of the medical profession via compulsory health insurance, reduce the annual number of deaths in our rapidly increasing and aging population from 1.4 million to 1.1 million. So the claim of "325,000 preventable deaths" has largely been displaced by the "alarming doctor shortage" claim.

INCREASED RURAL MEDICAL SERVICE DESPITE FEWER PHYSICIANS

I was born and raised in Pike County, a rural section of west-central Illinois. Pike County is bounded on the east by the Illinois River and on the west by the Mississippi. It is 45 to 70 miles north and slightly west of St. Louis. A county bounded by two rivers is interlaced with creeks and streams and is hilly. On the whole, it would be classed as a poor county because of the land. My home town is Griggsville, whose population has fluctuated around 1,200. The largest town in the county is Pittsfield, the county seat. During my boyhood there were rarely fewer than four physicians in Griggsville. I recall one instance in which there was an emergency need for a physician on a morning when they all were out in the country on calls. The roads were so muddy that not one of them could get back to town within an hour.

I also recall my first contact with the word appendicitis. One of my grade school classmates did not come to school one morning, and the teacher told us that she was very ill with what the doctor called "inflammation of the bowel." We children snickered a little at such frankness on the part of the teacher—that was in 1911. The next day the teacher told us that our classmate had died of appendicitis and wrote "appendicitis" on the blackboard because it was a new word to us. She said that the girl had been brought by her father to the local railroad station, where they had to wait for a train, which was an hour late. The physician accompanied them westward about 32 miles where they were switched onto another railroad line which brought them eventually to Quincy, Ill. The child died soon after she reached the hospital. The teacher told us that the trip from the child's farm to Quincy required six hours. The distance is about 39 or 40 miles.

During many of the years since 1917, there has been no physician in town. Recently I studied the experiences of physicians in Pike County, one of whom practiced in Griggsville from 1923 to 1938. The population of the county declined from 27,000 in 1920 to 22,000 in 1950. There are 16 practicing physicians in the county now; whereas there were 42 in 1923. The number of persons per physician has more than doubled. But the fact that I want to bring out is that these 16 physicians can serve more people now than 42 physicians could 25 to 30 years ago. Why?

This question would be easy for many physicians to answer, especially those who have practiced in rural communities. Being an economist, I went about the matter in what may be considered an odd way. The first step was to consider what other occupational group in Pike County, Ill. might have had a somewhat similar experience during the same period of several decades. I went to the village postmaster, to whom many people in rural towns would go for information. I spoke with an older man who had once served as postmaster in Griggsville. As we discussed the decline in the number of physicians in the county, the postmaster made the observation that improvements in the road system in the county have been tremendously important to the physicians. The most important change in the road system was not the development of the few paved roads in the county but rather in the back roads, where a little grading, a new bridge or culvert, some oil or gravel create an all-weather rural road. At this point the postmaster began to talk about rural mail service instead of rural medical service. I have since examined the published

Economist and Statistician, American Medical Association.

The ideas expressed herein are those of the author and not necessarily those of the American Medical Association.

Read before the Federation of State Medical Boards of the United States at the Forty-Seventh Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1951.

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data. While the number of persons served by rural carriers in the entire United States increased slightly from 1920 to 1950 (from 29,900,000 to 30,500,000), within an even shorter period, from 1930 to 1949, the number of rural mail boxes increased from 5,400,000 to 7,000,000. The number of rural mail carriers in the United States today is only about three-fourths of (32,553) the number who were bringing mail to rural residents in 1920 (43,445). Meanwhile the volume of mail put in rural mail boxes has doubled in the 30 year period if, as seems logical, the rural areas have shared proportionally in the general increase from 5,700,000,000 pounds and 23,000,000,000 pieces in 1923 to 11,600,000,000 pounds and 43,500,000,000 pieces in 1949 for the entire United States. Obviously the rural mail carriers are able to travel much longer routes and, incidentally, in a shorter working day. In Pike County, 23 rural carriers today carry more mail to more people than did 36 carriers 30 years ago.

I submit that medical school educators and other students of medical care can learn almost as much about the question of the physician shortage in rural areas in America by studying the whole question of rural mail service as they can by studying the number, the ages and distribution of rural physicians. The practice of medicine can never be isolated from the forces of economic and social evolution. The practice of medicine cannot stand still when the whole way of life of people in other occupations is in the process of changing. Any economic service becomes a part of that social evolution.

But hard roads, automobiles and what happened to another occupational group as a result of these changes do not tell the whole story regarding the doubling of the number of persons per physician in Pike County. I mentioned the death of my classmate whose home, 4½ miles south of Griggsville, was 39 or 40 miles from Quincy. But, instead of being six hours away, it is now about one hour away. Yet that is not the important question in this picture of change. Would another child similarly stricken with appendicitis have to go to Quincy for an operation? She might choose Quincy, or she might go east to Jacksonville which would be somewhat closer (45 minutes away). She might even be taken to St. Louis, with its splendid medical and hospital facilities, in about one and a half to two hours. On the other hand, she might be taken to the 43 bed Illini Community Hospital in Pittsfield, which was erected in 1942—a trip of some 10 to 15 minutes. In fact, if she felt extremely ill, the physician might suggest that she go to the hospital immediately, where there would be better facilities for examination. If her father did not have an automobile or it was in the garage for repairs, there would be many neighbors who could be reached quickly by telephone who could take her to Pittsfield, Quincy, Jacksonville or even St. Louis. A child today would be far closer to a physician than one in 1911 in terms of lifesaving minutes even if there were no physician in Griggsville or Pittsfield and if there were no hospital in Pittsfield.

In our study of "medical service areas," which is based on the trading area principle, the central two-thirds of Pike County has been included in a medical service area (number 394) which has Quincy as its center. This area extends across the Mississippi River into Missouri. I am sorry that there was no similar delineation of medical service areas in 1920. For that reason I have had to make my historical comparisons on the basis of the number of persons per physician in the county—a geographic basis of comparison which I abhor because it is a political, not an economic, area. Little reliance can be placed on physician-population ratios for medical service areas. One of the reasons why fewer physicians are actually needed in Pike County is that trading areas have expanded. Some of the persons in Pike County obtain some of their medical care in Quincy (Adams County), in Jacksonville (Brown County) and in other larger towns.

TECHNOLOGICAL PROGRESS IN MEDICAL CARE

Some of my physician friends have been gentle in their criticism of my use of statistical procedures in the studies of the supply and distribution of physicians. I have stated repeatedly that 1,000 physicians in 1950 could (and did) render at least one third more medical service than could 1,000 physicians in 1940. (A rough index of the quantity of medical services delivered by physicians can be obtained by dividing the index of expenditures for physicians' services by its price index. Using this procedure, I have found that the amount of physicians' services increased at least one third per physician between 1940 and 1950.[1]) I have referred to this as an "increase in output" per physician and as technological progress in the practice of medicine. The increase in the total output also reflects an increase in demand. The increase in demand warrants more consideration than I can give it in this report. The most phenomenal fact of medical economics is the terrific rate of technological progress in the medical care industry in recent years. The tremendous changes in medical practice wrought by the introduction of the wonder drugs, the expanded use of auxiliary personnel by physicians, even the assistance given by other physicians in or not in private practice, and the increase in the percentage of patients treated in the office and in the hospital, rather than in the home, have combined to greatly increase the technological efficiency of physicians. As an economist, I strongly suspect that this rate of increase in output per person exceeds the comparable rate in the manufacture of automobiles, the production of coal, the transportation of commodities, in fact, in practically any industry that could be named. I hope that no one will consider these comparisons as invidious or improper for one in my position to make. I am trying to throw light on a very important question for the medical profession. I am trying to explain why I sincerely believe that as a result of present trends we are more likely to have more physicians than we need in the United States in the 1960's than we are to have fewer. Surely if the tremendous rate of increased productivity is continued throughout the 1950's, those who are concerned with medical education must plan accordingly.

1. Dickinson, F. G.: The Cost and Quantity of Medical Care in the United States, Bulletin 66, Bureau of Medical Economic Research, American Medical Association, 1948, p. 17. The Cost and Quantity of Medical Care in the United States, Bulletin 72 (1949 Supplement to Bulletin 66), Bureau of Medical Economic Research, American Medical Association, 1949, p. 8.

No one knows how long the present war emergency will last or can be sure of the type of warfare which may ultimately be our lot. But still physicians must be educated for a working lifetime; they cannot become surplus after a war.

Certain statisticians in the United States Public Health Service have predicted a dire shortage of 17,000 to 47,000 physicians in 1960.[2] These three authors did not prove a shortage, they merely assumed a shortage. In fact, if there had been twice as many physicians in 1940 in each of the 126 "health service areas" which they laid out, the shortage in 1960 would have been twice as great by their methods of computation.[3] Similarly the 1960 shortage would have been one half as great if there had been half as many physicians in each one of these areas in 1940. More generally, these authors have really shown that there was a shortage of about 50,000,000 people in the United States in 1940 if their methods of estimating shortages are applicable to other professions and occupations.

During the last two years I have served as a lay advisor to the committee which is conducting a survey of the legal profession under the auspices of the American Bar Association. Among the many pieces of printed matter and manuscripts that have been sent to me for comment, I have been struck by the repeated inferences and some direct unqualified statements that there is an alarming surplus of lawyers in the United States. Some of the explanation is doubtless found in the history of legal education in the United States. I believe that medical education is headed in the same direction, that is, towards the production of a surplus of members of the profession.

IS THERE A SHORTAGE OF PHYSICIANS?

The increase in the number of medical school graduates from 5,100 in 1949 to a projected 7,000 around 1960 should give pause for reflection. Are we laymen going to say that there is a shortage of physicians until there is one in every block in our cities and one in every community with more than 100 people? Of the approximately 42,000 areas (cities, towns, villages, whether incorporated or unincorporated) in the United States with a 1940 population of 100 or over, between 16,000 and 17,000 places have one or more physicians, counting all physicians; thus more than one-third of all the 42,000 places have a physician. Most studies of distribution ignore the 38,500 towns, villages and hamlets of less than 2,500 population. I doubt that drug stores, hardware stores, electricians or plumbers can be found in that many towns of 100 or more people. Are we laymen going to say that there is a shortage of physicians if one has to spend more than 30 minutes getting to a physician or travel more than 30 miles? Is there a shortage of medical schools unless every qualified candidate can be admitted to medical school? We also need chemists, physicists and elementary and secondary school teachers. The public has an interest in promoting the training of all these professions.

Before one can determine whether a shortage exists in any profession, one must make up one's own mind about the functions of the members of that profession. I deem it to be the function of the medical profession to relieve pain and to increase the length of useful life. This must also mean an increase in the number of persons dying later in life from diseases common in older persons. I observe that excellent progress is being made in the performance of these functions. I have pointed out elsewhere the following facts:

1. Maternal mortality in the United States, counting deaths among mothers of all races, income groups and sections of our large country, was slightly under 1.0 per 1,000 live births for 1949. Thus, for the first time in the history of large nations, the probability of a woman surviving pregnancy, childbirth and the puerperium are now at least 999 out of 1,000. In the long run, however, a mother saved in childbirth will in 20 to 50 years become a victim of one of the diseases of older persons, for example, cancer. That is, improved medical care means that these mothers will die old rather than young.

2. The infant mortality rate in the United States is now approximately 3 per cent, that is, the chances of a newborn infant surviving the first year of life are approximately 97 in 100. Also the infant mortality rate for the second six months of the first year of life is apparently lower in the United States than in any other country in the world, and our slightly higher mortality rate for the first six months of life is due largely to certain differences between nations in reporting and in classifying live births and fetal deaths. Again, good medical care means that these lives will end later rather than sooner.

3. Life expectancy at birth in the United States has risen from approximately 49 years in 1900 to approximately 69 years in 1950. (Incidentally, Swedes live longer in Minnesota than they do in Sweden.)

There are many other comments that could be made on how well physicians are performing their function, as I have defined that function. We have had enough physicians to enable more and more persons to die later in life. I have no illusions about adequate medical care, for there can be no such thing as adequate medical care to the family of a dying person. The best simply is not good enough, but medical care can and will get better and better.

There is yet another way to indicate how well the physician is performing his function. Although heart disease kills about four and a half times as many people as fatal accidents and although heart disease cuts off about twice as many unrealized remaining life years as fatal accidents, it is nevertheless true that fatal accidents cut off more years from the working lifetimes of the American people (ages 20 to 65) than does heart disease or any other one natural cause of death. Thus the prevention of fatal accidents has become the number one job of preventive medicine in the United States if one is thinking about the productive and military strength of the nation. I appreciate that the number of

2. Mountin, J. W.; Pennell, E. H., and Berger, A. G.: Health Service Areas: Estimates of Future Physician Requirements, Bulletin 305, Federal Security Agency, United States Public Health Service, 1949.

3. The Alleged Shortage of Physicians, Miscellaneous Publication M-31, Bureau of Medical Economic Research, American Medical Association. Reprinted from J. A. M. A. 142: 111 (Jan. 14) 1950.

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deaths or the number of years of life cut off by death may be an equally valuable criterion for rating the causes of death.

Let me also examine the function of the physician in a somewhat baleful light. Has medical progress been too rapid during the twentieth century? As for myself and my family the answer is "no." But as a student of the social sciences I might well ask whether it is entirely good to have so many older persons alive. Can medical progress ever be too rapid for our social institutions to digest? If there is anything wrong with medical progress in this century, is it the fact that we have had too much instead of too little? [4] But I think that before anyone can say that there is an alarming shortage of physicians, he must grapple with the problem presented by this simple statistic: Since 1900 the entire population of the United States has doubled, but the population age 65 and over has quadrupled. Does that statistic indicate that the American medical profession is not performing its function and that larger numbers of additional physicians are needed?

There is one curious aspect of this question of shortage which I have heard and read a number of times. The claim is made that the physician has not been responsible for most of the gains in reducing the death rate from the diseases of childhood, but that the credit should be given to the plumber, the house builder, the sanitary engineer, the immunizer and, of course, to the march of science. Some persons apparently believe that drug stores or even grocery stores should be permitted to sell powerful drugs over the counter, which would eliminate the necessity of a physician's diagnosis and prescription. The persons who make this claim get themselves into a terrible position when they add that there is an alarming shortage of physicians. Stated in the very simplest terms, their claim is that physicians are not responsible for health gains, yet there is an alarming shortage of physicians.

About two-fifths of the active physician population of the United States joined the armed services during World War II. On Jan. 1, 1945 there were 60,101 physicians in government service according to the estimates of the Directory Department of the American Medical Association. Roughly this meant that 60 per cent of the physicians remained at home to take care of the 90 per cent of the population which remained civilian. What happened? The health of the American people continued to improve. I am not saying that I think that fewer physicians are better, but I would like to point out to any student of supply and demand problems that the supply of physicians was stretched during World War II and the results were amazing. This stretching of supply may be thought of as a social experiment in testing the supply. If World War III were to be fought as World War II was fought, I do not believe there is a single person who would contend seriously that several tens of thousands of physicians, for example, 30,000, could not be spared to the armed services. Physicians are professional persons, and the quantity and quality of medical care delivered by them is subject to great flexibility. There would undoubtedly be differences of opinion as to how long these tens of thousands of physicians could be spared to the armed services without lowering the health of civilians. And, of course, there is speculation about the kinds of auxiliary personnel that would be needed in the event of war in this country.

But the 60,101 physicians in government service on Jan. 1, 1945 are strong evidence of a "surplus" of physicians in the early 1940's. Has that surplus evaporated? This brings me to my general thesis: If the present upward trend in output per physician is continued, the number of physicians per 100,000 population need not remain constant but could decline moderately and slowly while health progress is continued. Yet our physician-population ratio has been rising for more than 20 years, and Mountin, Pennell and Berger [2] predict it will be even higher in 1960. At last report our ratio was the highest of any country in the world except for Palestine with its many refugee physicians. More generally, the ratio to population for any occupational group may rise or fall in the process of economic and social evolution. The ratio for rural mail carriers has, of course, declined. Change alone requires that some must rise and some must fall.

FUNDS FOR MEDICAL EDUCATION

Once again, however, I must emphasize that those charged with deciding public policy must try to keep the public interest uppermost in their minds. Physicians' services are delivered to persons who also want the services of other professions. Only 4 per cent of their income is spent for medical care (1 per cent for physicians' services); the other 96 per cent is spent for all the other items in the standard of living. The public is justifiably interested in assuring a steady and ample supply of physicians, and medical school deans and members of licensure boards must be special pleaders for more money for the medical schools. But as an economist I would like to make a special plea for a consideration of alternative uses for educational funds which must either remain fixed or be augmented by funds which are now devoted to other purposes. Any future expansion of the medical training plant must be compared to the value of the same money and resources spent on training other professional workers, especially physicists and chemists. Although I intend no invidious comparisons between professions, I believe that a strong case could be made for the proposition that physicists and chemists are destined to become almost as important as physicians in protecting the health of the American people in the atomic age. Doubtless many persons would use the term "basic sciences" rather than just physics and chemistry in this appraisal of relative national needs for professional personnel. And in the last analysis one must consider what part of the national income should be devoted to education, although in these days of fiscal irresponsibility some persons would have the people believe that there is no limit to the amount which can and must be spent for "good" purposes.

4. This aspect of medical progress will be discussed by Dr. Dickinson more fully at the meeting of the American College of Physicians in April.

SUMMARY AND CONCLUSIONS

I have tried to show that the supply of physicians' services has been expanding at a very rapid rate. I have not intended to say that the geographic distribution of physicians is perfect. I assume that it is imperfect and that there will always be attractive openings for physicians in some cities, towns and villages. The number of physicians writing to the American Medical Association wanting to locate or relocate is now in excess of the number of communities requesting physicians. This reverses the situation of 1946, 1947, 1948 and early 1949. The tide has turned. But in terms of results it seems to me that the general analysis points toward a surplus or a potential surplus of physicians rather than a deficit. The physicians' fees have risen a little more rapidly than half as fast as the cost of living index of all consumer prices. It stands to reason that this index of physicians' fees, as reported by the United States Bureau of Labor Statistics, would have risen much faster if there had been such an alarming shortage of physicians. Average net incomes of physicians have just kept pace with the rise in national income per capita. I conclude that the supply of physicians' services has been increasing at an extremely reasonable rate—favorable to the health of the American people, fast enough to meet the increased demand and sufficient to prevent any unduly sharp general increase in physicians' fees.

I have tried to place the supply of physicians in its proper setting, with only a brief look into the future. I have further narrowed my report to a consideration of physicians as an entity. The demand for physicians could be broken down into the demand for each specialty, but I believe that the direction of physicians into these specialties is a problem for educators rather than for an economist. The results of a study which was recently completed [5] indicate that the free forces of supply and demand in a very disturbed period worked to produce a more even distribution of specialists and of general practitioners (including part-time specialists) in relation to state populations in 1949 than in 1938.

Neither have I commented on the problem of financing the present expansion of medical education facilities. Apparently "expanding the expansion" would produce financial stresses and strains. My analysis has been directed rather to a consideration of the supply of physicians as an object of economic expenditure and as a most important factor in the quality of medical care. I sometimes think that the only measure of quantity in a profession is quality. High standards of medical education buttress our medical licensure laws and, in turn, assure the people that the physician who holds life in his hands is qualified to assume that awesome responsibility. Whereas a student who wishes to do graduate work in physics or chemistry may go to a class A, class B, class C or even a class D school and receive his degree of doctor of science or doctor of philosophy, a physician must be graduated from a class A medical school to be licensed to practice his profession in all but a few of our states. Thus the contrast between the almost unlimited chances to become a graduate student in chemistry or physics in schools of grades A to D and the limited openings for medical students could be eliminated by repeal of all state medical licensure laws! The demand for quality, to which society has given legal sanction by the state licensure laws, both raises the price of medical education and vastly complicates the task of increasing the number of students quickly.

Finally, our medical schools at present and the other schools that train auxiliary medical personnel have made possible enough medical services to provide the American people with the highest level of health of any large nation and even above that of some of the smaller, traditionally healthiest nations. We have had enough physicians to achieve a truly remarkable record of health progress. Is there any better measure of the supply of physicians' services or of the supply of rural mail carriers' services than performance?

5. Dickinson, F. G., and Bradley, C. E., in cooperation with Cargill, F. V.: Comparisons of State Physician-Population Ratios for 1938 and 1948, Bulletin 78, Bureau of Medical Economic Research, American Medical Association, 1950.

COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

CHEMICAL DEFENSE

Colonel John R. Wood
Medical Corps, United States Army

This paper is one of a series requested by the Council on National Emergency Medical Service to inform the medical profession on problems pertaining to civil defense. It does not necessarily reflect, however, the opinions of the Council or of any other official body unless so stated in the article.

C. JOSEPH STETLER, *Secretary.*

THE PROBLEMS

Civil defense agencies must be prepared to deal with all probable types of attack but must be especially alert to those types that are capable of inflicting heavy damage from long range. Among the latter are air attacks with the newer chemical warfare agents.

I do not believe that any chemical warfare agents except the nerve gases are adequate for long range attack.[1] The nerve gases were first developed by the Germans but are now well known in many countries. They are nearly colorless, essentially odorless liquids, which yield highly toxic vapors on evaporation. They range in volatility from nonpersistent to more persistent than mustard gas. They may be dispersed by mortar shells, artillery shells, rockets or aerial bombs; the persistent types may be sprayed from airplanes. The probable munition for long range attack is the aerial bomb, loaded with nonpersistent nerve gas and a burster charge of high explosive.

Nonpersistent nerve gases are vaporized completely by detonation, and the vapors soon form an invisible

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1. Wood, J. R.: Chemical Warfare: A Chemical and Toxicological Review, Am. J. Pub. Health 34: 455-460 (May) 1944.

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cloud. Its exact behavior in a city is unknown, but it will drift downwind at the effective velocity of the wind at street level; it will grow in size, and its gas concentration will fall as turbulence, thermal currents and diffusion cause it to mix with uncontaminated air; eventually, it will be dissipated by dilution.

Many variables determine the range and casualty potential of such a cloud, notably, the scale of attack, the weather, the terrain, the population density and the training and resources of the people for chemical defense. A hypothetical case will serve to illustrate the civil defense problems involved. Assume that this is an initial attack on a typical target city, delivered without adequate warning, by planes from a great height; that gas bombs are dropped over a one square mile area of the business district, forming a gas cloud of that size and about 10 meters in height and containing a concentration of gas such that breathing it for about two minutes would eventually prove fatal. Assume that the weather is favorable and that a six mile an hour breeze is blowing at street level. Such a gas cloud may be expected to drift three miles downwind in the first 30 minutes and to carve a path 10 to 12 square miles in area.

People caught on the streets without access to gas masks or gas-proof shelters would become casualties in over more than 90 per cent of this path. The highest concentrations of gas would occur at the downwind edge of the impact area, and the largest numbers of severe and fatal cases would occur in the impact area and in the first mile of the downwind path. About half as many such cases would occur in the second mile downwind, and severe cases, but few fatalities, would occur in the next one-half mile. In the area three miles downwind moderate and mild cases would predominate. Beyond that area the effects would be relatively trivial, and successful escape should be possible.

If the attack were delivered during a rush hour, when large numbers of people are on the streets, there would obviously be thousands of casualties. However, people in buildings are not immune to the gas cloud. It is probable that high explosive bombs will be dropped on the impact area at the same time as the gas bombs. Glass breakage and structural damage would render the lower floors of these buildings practically as susceptible to gas as the streets. Unless systems that circulate the air in buildings (heating, ventilating and air conditioning) are turned off promptly, floor levels above the top of the gas cloud will also be infiltrated with gas. Casualty rates on the lower floors of damaged buildings may approach those on the streets, but there should be fewer and less severe casualties on floors above the cloud.

Intact buildings in areas downwind would offer some protection, provided that doors and windows are tightly closed and air-circulating systems are turned off. Some gas leakage is almost inevitable, and a rush of people indoors from the streets may admit gas. The concentration of gas would be only a fraction of that on the streets, but it would persist much longer. The casualty effects of long exposures to low concentrations indoors can approach those of the shorter exposures to higher concentrations on the streets. Nonventilated upper floors of tall buildings are relatively proof against gas, but gas-filled lower floors will remain hazardous until ventilated.

Surface vehicles in motion offer little protection except as a dubious means of escape from the path of the cloud. Ventilated subways with street-level air intakes are particularly vulnerable; it may be anticipated that high concentrations of gas will be sucked into underground tunnels and stations in the path of the cloud. Elevated railways are safe only at elevations above the top of the gas cloud.

Panic is a threat of major importance. Popular fear of gas will be great if trustworthy protection is not available. An hysterical cry of "Gas!" or even an orderly warning may signal a wild and largely aimless scramble for safety, unless the people have been taught in advance what to expect and what to do. The prompt and rather dramatic effects of nerve gas [2] may increase the panic of those near enough to see casualties. The zone of panic may extend far beyond the area of actual danger from gas and may be the scene of many unnecessary casualties. If uncontrolled, panic may cause streets to be blocked and hamper rescue efforts.

The rapidity with which symptoms appear and progress makes early rescue and resuscitation imperative but difficult. In the hypothetical case cited, severe casualties and fatalities may be expected to appear over most of the impact area in the first 10 minutes and in the area one mile downwind in 10 to 20 minutes. In the area two miles downwind most of the severe cases and fatalities should occur at 20 to 60 minutes, and in the next one-half mile severe cases may develop at 30 to 60 minutes. Early rescue would not be required in the remainder of the cloud path.

Unconscious or disabled casualties will be found on the streets, in the rubble of the bombed area and in subways, vehicles and buildings in the path of the gas cloud. In the absence of effective protection there will be thousands of casualties requiring rescue and medical attention in the first hour. The effective period for initiating the resuscitation of the severe cases and of the otherwise fatal cases will have largely passed in an hour, but artificial respiration of the most severely affected may have to be continued one or more additional hours.

The disabled must be evacuated to hospitals for close observation and treatment for several days and for recuperation for one or more weeks. Ambulant cases must be directed to outpatient clinics or be instructed to seek the aid of personal physicians. Finally, the dead must be collected and moved to designated locations for identification.

THE DEFENSE

Defense against gas includes three essential principles of prevention: first, the detection and recognition of the gas; second, the warning of all persons in the danger zone; and third, the prompt use of individual or collective protection. If this were completely effective, there would be no need for rescue, resuscitation, treat-

2. Wood, J. R.: Medical Problems in Chemical Warfare, J. A. M. A. 144: 606-609 (Oct. 21) 1950.

ment, evacuation and hospitalization. However, hospitalization will always be needed in proportion to failures of the other defense measures.

Automatic detector devices may never be feasible for large cities, where many would have to be installed and maintained. It is probable that the first knowledge of a nerve gas attack will come from the recognition of its effects on the initial casualties. Notable among the symptoms [2] are an immediate bronchoconstriction, with great difficulty in breathing, and pinpoint constriction of the pupils. Severe casualties rapidly become cyanotic, develop nausea and vomiting, fall unconscious and exhibit tremors; such symptoms are followed by clonic and tonic convulsions, until apnea and generalized flaccid paralysis supervene. Persons with advanced symptoms may show profuse nasal discharge, massive salivation and incontinence of urine and feces. If the public is made aware of these impressive symptoms, a nerve gas attack will be recognized immediately. If none of these effects occurs in exposed individuals within a minute or two, the nerve gases may be ruled out.

Information of a chemical attack must be transmitted promptly to local civil defense headquarters. This is the duty of every civil defense warden or worker in the area who is able to do so. Local headquarters must act immediately to warn all persons in the downwind path of the gas cloud. This presupposes the existence of a control center manned with trained workers, a warning system, a distinctive gas alarm with which the public is familiar and a knowledge of what to do when the signal is heard.

If the city is not zoned for defense, a citywide signal must be sounded, and the "all clear" must be withheld until the gas cloud has passed out of the city. This presupposes that the Civil Defense Chemical Warfare Defense Service has organized, equipped and trained at least one mobile gas detection team, and that both the control center and detection team know how to predict the path of the gas cloud and how to track it across the city.

If the city is zoned for defense, the alarms need be sounded only in the bombed area and in sections downwind that lie in the probable path of the cloud. The control center must know the local weather report of wind direction and velocity to predict the danger zone.

At wind speeds above five miles an hour the path of the gas cloud will extend downwind from the bombed area within a 60 degree sector, which is bisected by a line in the direction of the wind and passing through the center of the bombed area. For wind speeds of less than five miles an hour it is safer to plot a 90 degree danger sector. If the wind is calm or light and variable, all zones within a circle five miles in diameter, with its center at the center of the bombed area, should be warned initially.

Public instruction and practice are essential to avoid confusion and panic. The public should retire promptly to gas-proof shelters, if available. If shelters are not within easy reach, refuge should be sought on the upper floors of tall buildings. Air-circulating systems of all types should be shut off, and windows and doors must be closed. All unauthorized traffic into the danger zone, both surface and subway, must be halted. Subway stations and the streets downwind from the bombed area should be evacuated promptly, the people retiring to shelters or the tallest building at hand. Motor vehicles should be pulled as near to the curbs as possible before being deserted, leaving the centers of the streets open for civil defense traffic. Surface and subway trains standing in stations in the danger zone should load promptly and proceed out of the path of the gas cloud.

Evacuation of the edges and more distant areas of the danger zone may be possible before the gas arrives. This requires good judgment, on the spot instructions to the public (i. e., radios and loudspeakers) and control of traffic by police and civil defense authorities. As time for escape runs out, all remaining people must be gotten off the streets before the gas arrives.

The Civil Defense Chemical Warfare Defense Service must determine when areas are clear of gas and notify the control center when it is safe to sound the "all clear." At this signal it is safe to reenter the area, but people on the upper floors of buildings must not descend to lower floors until the buildings have been ventilated. This service must be performed by civil defense personnel wearing gas masks and may take several hours, as many buildings are involved. Subways and vehicles also must be ventilated before they are entered.

If these preventive measures are carried out effectively, medical problems will be reduced to the minimum, and casualties will be confined largely to the bombed area and immediately downwind, where people were overcome before defensive or evasive actions were possible. If these measures are neglected or poorly executed, the rescue and medical problems will be staggering, and the loss of life may be high.

The control center must dispatch rescue and medical teams to the bombed area and the area immediately downwind at once, as minutes count heavily in nerve gas poisoning. Many severe casualties and some fatalities may be expected in the bombed area within 10 minutes. Nearly all the emergency treatment and resuscitation of these casualties must be performed by nonmedical personnel; only a small fraction of the nurses and physicians needed can be expected to arrive in time to help these initial casualties. It is of the utmost importance that every civil defense worker be trained to give intramuscular injections of atropine and to administer artificial respiration. Applied early, these are the lifesaving measures.

Certain practical aspects of emergency treatment previously described [2] should be amplified here:

1. All civil defense personnel who enter the gassed area must wear gas masks until the area is free of gas. They should have rubber gloves, rubber overshoes (or boots) and a plastic raincoat available for use in areas contaminated (wetted) by persistent nerve gases; these need not be worn if the nerve gas present is of the nonpersistent type (no liquid contamination).

2. They must put on gas masks to enter gassed buildings that have not been ventilated.

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3. The patient must be protected against further exposure to gas as soon as possible. The only means now available for mass application is the gas mask. Rescue and medical teams must carry extra gas masks for patients. This requirement is not large, as many areas will be clear of gas by the time the teams arrive.

4. Gas masks make manual artificial respiration more difficult but do not prevent its application. The few patients who can be treated with a mechanical resuscitator equipped with oxygen tanks are protected from gas while they breathe oxygen. A portable, hand-powered bellows-type resuscitator, equipped with a gas mask canister and drawing air for both the intake and relief valves through the canister, is on the drawing board (The Ohio Chemical & Mfg. Co., Minneapolis), but it is not yet in production.

5. The most effective manual methods of artificial respiration have been shown recently [3] to be the Holger-Nielsen and the hip roll-prone pressure methods. The former is less tiring over the long periods required for severe nerve gas cases.

6. Rescue and medical teams should carry a generous supply of atropine in a form ready for intramuscular injection. Two are commercially available: the ampin® and the syrette®; others may appear later. Each contains 2 mg. of atropine sulfate (or tartrate), which is the correct initial dose. The average layman can be taught in a minute or two to give an intramuscular injection correctly with either.

7. Sterile technique, while desirable, should be abandoned without hesitation in order to give large numbers of injections rapidly. The few infections that may develop can be treated later.

8. Apneic patients should be given artificial respiration until cyanosis is overcome, before atropine is administered; otherwise, there is danger of precipitating a fatal ventricular fibrillation.

9. Drugs to control convulsions [1] should be administered only by physicians.

10. Liquid contamination of the skin or clothing by persistent nerve gas is extremely dangerous and must be removed quickly. Swab the skin with an alkaline fluid and remove contaminated clothing.[1]

11. The order of priority for handling the advanced severe case is: first, protect the patient from inhalation of gas; second, start artificial respiration; third, decontaminate the skin and remove contaminated clothing (if liquid contamination is present); fourth, give atropine as soon as cyanosis is overcome; fifth, control convulsions, and sixth, evacuate to the hospital when breathing is restored or evacuate under mechanical resuscitation.

12. Do not send ambulant patients to the hospital; administer one dose (2 mg.) of atropine and send them home or to the outpatient clinic.

3. Gordon, A. S.; Raymon, F.; Sandov, M., and Ivy, A. C.: Manual Artificial Respiration: Comparison of Effectiveness of Various Methods on Apneic Normal Adults, J. A. M. A. **144**: 1447-1452 (Dec. 23) 1950. Gordon, A. S.; Fainer, D. C., and Ivy, A. C.: Artificial Respiration: A New Method and a Comparative Study of Different Methods in Adults, J. A. M. A. **144**: 1455-1464 (Dec. 23) 1950.

COUNCIL ON PHARMACY AND CHEMISTRY

The Council has voted that this warning statement be added to the labeling of the following antibiotics.

R. T. STORMONT, M.D., *Secretary.*

WARNING STATEMENT TO BE INCLUDED IN AUREOMYCIN HYDROCHLORIDE, CHLORAMPHENICOL AND TERRAMYCIN HYDROCHLORIDE LABELING

The new antibiotics chloramphenicol, aureomycin hydrochloride and terramycin hydrochloride are highly bacteriostatic for many bacteria. Susceptible bacteria are suppressed and Monilia or other yeast-like organisms may replace the normal or abnormal bacterial flora. This most frequently occurs in the large bowel and is of little consequence. However, if this replacement occurs in a lung abscess, bronchiectatic cavity or in certain other lesions, a condition is created which may be unfavorable for the patient. Deaths from pulmonary moniliasis following therapy with the new antibiotics are known. Also instances of cutaneous moniliasis mistaken for sensitivity have been noted when the newer antibiotics were used in the treatment of disease.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Aminophylline-U.S.P. (See New and Nonofficial Remedies 1950, page 278).

Tablets Aminophylline: 100 mg. Paul B. Elder Company, Bryan, Ohio.

Amphetamine Phosphate (See THE JOURNAL, February 3, 1951, page 319).

Elixir Ramphetamine Phosphate: 473 cc. and 3.78 liter bottles. A flavored alcohol solution containing 1.25 mg. of amphetamine phosphate in each cc. R. J. Strasenburgh Company, Rochester, N. Y.

Amphetamine Sulfate-U.S.P. (See New and Nonofficial Remedies 1950, page 205).

Tablets Amphetamine Sulfate: 10 mg. Premo Pharmaceutical Laboratories, Inc., South Hackensack, N. J.

Benzestrol (See New and Nonofficial Remedies 1950, page 330).

Suspension Benzestrol with Benzyl Alcohol 2%: 1 cc. ampuls and 10 cc. vials. An aqueous suspension containing 5 mg. of benzestrol in each cc. Schieffelin and Company, New York, N. Y.

Calcium Levulinate-N.F. (See New and Nonofficial Remedies 1950, page 372).

Solution Calcium Levulinate: 10 cc. ampuls. A solution containing 0.1 Gm. of calcium levulinate in each cc. Direct Laboratories, Inc., Buffalo, N. Y.

Dibucaine Hydrochloride-N.F. (See New and Nonofficial Remedies 1950, page 56).

Heavy Solution Nupercaine Hydrochloride with Dextrose: 2 cc. ampuls. A solution containing 2.5 mg. of dibucaine hydrochloride and 50 mg. of dextrose in each cc. Ciba Pharmaceutical Products, Inc., Summit, N. J.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Edited by . . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

PENICILLIN-RESISTANT STAPHYLOCOCCI

In the few years since penicillin has come into wide use, it has become increasingly apparent that some strains of Staphylococcus obtained from patients with infections may vary widely in their sensitivity to penicillin and that resistant strains are frequently encountered. This has been reflected clinically, as pointed out by Bloomfield and his associates,[1] in a number of failures in the treatment of staphylococcic infection with penicillin. North and Christie [2] found a highly significant proportion of penicillin-resistant staphylococci in lesions of patients in wards in which penicillin treatment had been given. Martyn [3] studied normal, healthy, breast-fed infants, born in the maternity department of St. Mary's Hospital, Manchester, England; he isolated Staphylococcus pyogenes from the nasopharynx in 62 per cent and from the feces in 50 per cent. The nasopharynx yielded 55.5 per cent penicillin-resistant staphylococci and the feces 58.5 per cent. All the resistant strains produced penicillinase. Barber and Rozwadowska-Dowzenko [4] investigated 100 cases of infection with Staphylococcus pyogenes in one hospital between April and June 1948. Penicillin-resistant organisms were present in 59 of the patients. Previous studies in the same hospital gave an incidence of 14.1 per cent in 1946 and 38 per cent in 1947. The organisms from all of the 59 patients produced penicillinase.

Abraham and Chain [5] demonstrated an enzymatic inactivation of penicillin. The enzyme, which they designated as penicillinase, was absent from extracts of penicillin-sensitive Staphylococcus aureus, of yeast and of Penicillium notatum. They demonstrated in subsequent studies that the presence or absence of the enzyme in a bacterium may not be the sole factor determining its insensitivity to penicillin. Kirby [6] demonstrated a highly potent penicillin "inactivator" from seven strains of Staphylococcus aureus that were naturally resistant to penicillin; seven sensitive strains did not produce a penicillin-destroying substance.

Demerec [7] pointed out that strains of bacteria resistant to various sulfonamide drugs, as well as strains resistant to penicillin, may readily be obtained by use of mediums containing increasingly higher concentrations of the respective chemicals. Resistance of staphylococci to certain concentrations of penicillin is not induced, in his opinion, by the action of penicillin on bacteria but arises independently by mutation. In any large population of bacteria of the strain of Staphylococcus, there are individual organisms resistant to certain low concentrations of penicillin. If this population is exposed to the action of such concentrations of penicillin, nonresistant organisms are eliminated and the resistant ones survive. Thus, penicillin acts as a selective agent which suppresses nonresistant bacteria.

Spink and Ferris [8] describe two types of resistance to penicillin by staphylococci. The first type of resistance is an adaptation that may be reproduced in vitro. This resistance is of a temporary nature and is not associated with the production of penicillinase. The second type, which occurs in patients as a result of treatment with penicillin, results in the establishment of strains with a permanent resistance to penicillin, and these strains produce penicillinase. The mechanism whereby temporary resistance takes place is not clearly understood. The permanent type of resistance involves the presence of resistant cells in a penicillin-sensitive strain, which, when permitted to multiply rapidly, establish a uniformly resistant strain. These authors feel that the establishment of resistant strains of Staphylococcus in the human body can be prevented by the initial use of adequate quantities of penicillin. The antipenicillinase immune serum developed by Perlstein and Liebmann [9] by giving rabbits injections with purified penicillinase has not been sufficiently investigated to permit a conclusion.

Spink [10] emphasizes that patients can be infected initially by penicillin-sensitive strains of Staphylococcus, which become highly resistant as a result of treatment with penicillin. This resistance is not of a temporary nature, and the resistant organisms are just as invasive as the sensitive parent cocci. This biologic feature of resistance to penicillin is of extreme importance in the epidemiology of staphylococcic infections and can be correlated with the increasing incidence of therapeutic failures with penicillin. Penicillin is now frequently administered in homes and in rural areas. Penicillin-resistant strains will appear more diffusely through the population, the carrier rate of these resistant strains will

1. Bloomfield, A. L.; Kirby, W. M. M., and Armstrong, C. D.: A Study of "Penicillin Failures," J. A. M. A. **126**: 685 (Nov. 11) 1944.

2. North, E. A., and Christie, R.: Observations on the Sensitivity of Staphylococci to Penicillin, M. J. Australia **2**: 44 (July 14) 1945.

3. Martyn, G.: Staphylococci in the Newborn: Their Coagulase Production and Resistance to Penicillin and Streptomycin, Brit. M. J. **1**: 710 (April 23) 1949.

4. Barber, M., and Rozwadowska-Dowzenko, M.: Infection by Penicillin-Resistant Staphylococci, Lancet **2**: 641 (Oct. 23) 1948.

5. Abraham, E. P., and Chain, E.: An Enzyme from Bacteria Able to Destroy Penicillin, Nature **146**: 837 (Dec. 28) 1940.

6. Kirby, W. M. M.: Properties of a Penicillin Inactivator Extracted from Penicillin-Resistant Staphylococci, J. Clin. Investigation **24**: 170 (March) 1945.

7. Demerec, M.: Production of Staphylococcus Strains Resistant to Various Concentrations of Penicillin, Proc. Nat. Acad. Sc. **31**: 16 (Jan.) 1945.

8. Spink, W. W., and Ferris, V.: Penicillin-Resistant Staphylococci: Mechanisms Involved in the Development of Resistance, J. Clin. Investigation **26**: 379 (May) 1947.

9. Perlstein, D., and Liebmann, A. J.: The Production of Anti-Penicillinase Immune Sera, Science **102**: 197 (Aug. 24) 1945.

10. Spink, W. W.: Clinical and Biologic Significance of Penicillin-Resistant Staphylococci, Including Observations with Streptomycin, Aureomycin, Chloramphenicol, and Terramycin, J. Lab. & Clin. Med. **37**: 278 (Feb.) 1951.

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increase and the incidence of penicillin-resistant staphylococcic infection will rise. Persons who have never received penicillin become infected with penicillin-resistant Staphylococcus strains. The appearance of highly resistant strains of Staphylococcus is definitely related to the widespread use of the antibiotics.

Drug-resistant micro-organisms constitute one of the major problems of chemotherapy. For the present, solution will be sought in the employment of the newer antibiotics, such as streptomycin, chloramphenicol, aureomycin and terramycin, or in the various combinations of these with penicillin. At the same time there must be continued searching for other antibiotics that may be used to overcome some of the problems now associated with antibiotic therapy.

SCHEDULES OF ANTIBIOTIC ADMINISTRATION

Considerable speculation has prevailed as to whether, in the use of antibiotics, it is desirable to sustain their concentration in the body at effective levels or whether they may be given discontinuously, with long periods during which the serum concentrations are below the effective threshold. This uncertainty reflects the fact that conclusive information is not available as to whether the mechanism of their action in vivo is the same as that in vitro or whether host factors may supervene to augment and to supplement their direct bactericidal effect.

Recent studies have helped to clarify this situation in the case of penicillin. It has been shown in a number of experimental infections that the concentrations maximally effective in the animal are essentially the same as those similarly effective in the test tube.[1] Further, with most bacterial strains studied, penicillin continued to exert a bactericidal effect only as long as it remained at the effective level at the focus of infection. It follows that the concentration of penicillin at the focus of infection should probably be maintained at the maximally effective level.

It does not, however, follow that discontinuous therapy is necessarily ineffective. On the contrary, clinical experience has shown that many infections can be adequately controlled by intermittent treatment, with long penicillin-free intervals.[2] Several factors serve to provide an important and valuable margin of safety in this respect. One is the fact that, after penicillin has fallen below effective levels, the then surviving bacteria do not immediately start to remultiply. Instead, there follows a recovery period, during which the bacteria remain constant in number and during which they are presumably recovering from the toxic effects of the drug.[3] The duration of the recovery period varies according to the strain, the concentration of penicillin to which the organisms have been exposed and the duration of that exposure. After the surviving bacteria recover and start to remultiply, if they have been sufficiently reduced in number by the previous therapy, even several generations would represent an insignificant increase relative to the number originally present. Finally, it is possible that host factors can dispose of organisms damaged by their previous exposure to penicillin, even though those host factors may not be effective against the normal organism. In the experimental laboratory this has been shown to be the case for only one of four bacterial species studied.[3d] Whether this is true in man and whether this mechanism operates in a significant proportion of the ordinary human pathogens remain to be determined. In general, therefore, intermittent therapy will be effective, provided the penicillin-free interval is not long enough to permit the recovery and extensive remultiplication of the surviving organisms.

The suggestion has been made that at any given moment there are a certain number of organisms resistant to the action of penicillin ("persisters" [4]) and that intermittent treatment would permit these organisms to resume multiplication and thereby become susceptible to the drug.[5] However, in the routine use of penicillin, this seems an undesirable procedure; it remains to be determined whether a significant proportion of treatment failures with penicillin is due to such persisters.

The term "effective concentration" of penicillin requires elaboration. It seems clear that it does not suffice to provide a serum concentration of penicillin equivalent to the "sensitivity" of the particular strain. As ordinarily determined in the laboratory, the sensitivity of a strain to penicillin is the concentration that suffices to prevent visible growth in a culture medium. Aside from the variability of the strain, this concentration is usually only a fraction of that necessary to kill the organisms at the fastest possible rate. The latter maximally effective concentration may be two, four or even 10 times greater than the concentration that suffices to prevent growth. Further, approximately half the serum penicillin is bound to the serum proteins and is therefore not available for diffusion into the tissues; further complications are introduced by the varying site of the infection, the blood

1. Eagle, H.; Fleischman, R., and Musselman, A. D.: The Effective Concentrations of Penicillin in Vitro and in Vivo for Streptococci, Pneumococci, and Treponema Pallidum, J. Bact. **59**: 625, 1950; Effect of Schedule of Administration on the Therapeutic Efficacy of Penicillin, Importance of the Aggregate Time Penicillin Remains at Effectively Bactericidal Levels, Am. J. Med. **9**: 280, 1950.

2. Tillett, W. S.; McCormack, J. E., and Cambier, M. J.: The Use of Penicillin in the Local Treatment of Pneumococcal Empyema, J. Clin. Investigation **24**: 595, 1945. Tumulty, P. A., and Zubrod, G.: Pneumococcal Pneumonia Treated with Aqueous Penicillin at Twelve-Hour Intervals, New England J. Med. **239**: 1033, 1948. Price, A. H.: Aqueous Penicillin Therapy for Pneumococcic Pneumonia: Injections at Twelve-Hour Intervals, J. A. M. A. **138**: 292 (Sept. 25) 1948. Hamburger, M.; Berman, J. R.; Thompson, R. T., and Blankenhorn, M. A.: The Treatment of Pneumococcal Pneumonia by Penicillin in Aqueous Solution at Long Intervals, J. Lab. & Clin. Med. **34**: 59, 1949. Altemeier, W. A.: Penicillin Therapy with Prolonged Interval Dosage Schedules, Ann. Surg. **128**: 708, 1948. Wheatley, D. P.: Massive Penicillin Doses in General Practice, Brit. M. J. **1**: 530, 1947. Tompsett, R.; Timpanelli, A.; Goldstein, O., and McDermott, W.: Discontinuous Therapy with Penicillin, J. A. M. A. **139**: 555, 1949. Weiss, W., and Steinberg, I.: Treatment of Pneumonia with Intramuscular Aqueous Penicillin Once a Day, Am. J. M. Sc. **217**: 86, 1949. Southworth, J. L., and Dabbs, C. H.: Prolonged Interval Dosage of Aqueous Penicillin in Surgical Infections, South. M. J. **42**: 981, 1949.

3. (*a*) Parker, R. F., and Marsh, H. C.: The Action of Penicillin on Staphylococcus, J. Bact. **51**: 181, 1946. (*b*) Parker, R. F., and Luse, S.: The Action of Penicillin on Staphylococcus: Further Observations on the Effect of a Short Exposure, J. Bact. **56**: 75, 1948. (*c*) Eagle, H., and Musselman, A. D.: The Slow Recovery of Bacteria from the Toxic Effects of Penicillin, J. Bact. **58**: 475, 1949. (*d*) Eagle, H.; Fleischman, R., and Musselman, A. D.: The Bactericidal Action of Penicillin in Vivo: The Participation of the Host, and the Slow Recovery of the Surviving Organisms, Ann. Int. Med. **33**: 544, 1950.

4. Bigger, J. W.: The Bactericidal Action of Penicillin on Staphylococcus Pyogenes, Irish J. Med. Sc., pp. 553 and 585, 1944.

5. Bigger, J. W.: Treatment of Staphylococcal Infections with Penicillin by Intermittent Sterilisation, Lancet **2**: 497, 1944.

supply to that focus and the possible local destruction of penicillin. Although generalizations are not possible, it is clear that in order to provide the maximally effective concentration at a focus of infection the serum concentration should be at least five times, and in some cases as much as 50 times, greater than the "sensitivity" of the strain. The choice of pharmaceutical preparation used (penicillin tablets, aqueous sodium penicillin, aqueous procaine penicillin or procaine penicillin in oil with aluminum monostearate) and the frequency of its administration will in large part be determined by the concentration desired at the focus of infection.

One can only speculate as to the degree to which these considerations apply to the other antibiotics. There is, however, good reason to suspect that they cannot be applied directly. Thus, in the case of penicillin, there is a maximally effective concentration of drug beyond which even a 10,000-fold increase does not further increase the rate of its bactericidal effect, whether in vitro or in vivo.[6] The advantage of the larger dose is primarily that it supplies the maximally effective concentration for a longer period of time. With streptomycin, however, the rate of bactericidal action increases strikingly with the concentration of the drug. It is a reasonable inference that the larger the dose of streptomycin, and thus the higher the concentrations afforded, the more rapid the bactericidal action in the infected host.

Aureomycin and chloramphenicol are only slowly bactericidal in vitro, and the rate of that direct effect is only slightly increased at higher concentrations. The highly satisfactory clinical response obtained with these two antibiotics in infections caused by susceptible organisms, despite their slow direct bactericidal action, suggests that with these drugs—unlike penicillin—host factors may play an important part in their therapeutic effect.

MORE PHYSICIANS FOR THE EMERGENCY

The plan of mobilization now being projected for this country for the next five to 10 years creates special demands for the services of physicians over and above those existing in time of peace. This issue of THE JOURNAL presents two statements, one by the chairman of the Health Resources Board, the other by the Joint Committee on Medical Education in Time of National Emergency, which discuss these special demands and methods by which these demands can be met. A third article, "Supply of Physicians' Services," while not concerned directly with the demands of the present emergency, also bears on the problem because it analyzes the factors that must be considered in evaluation of the adequacy of medical services available in the United States in peacetime, a consideration that, of necessity, must be taken into account in an estimation of the additional needs of the emergency and its possible consequences.

The postwar years have seen a notable increase in the number of students receiving medical training in the United States. The increase of 1,350 in the size of the freshman medical class over the past decade is the equivalent of opening at least 15 new medical schools, and still further expansion is in progress.

Estimates of future medical service needs in time of national emergency are difficult because of the many unpredictable forces that determine the supply and demand for these services at any given time. The problem is of such importance to the safety and welfare of the nation, however, that every effort must be made by government agencies, the medical profession, the medical schools and the public to arrive at the best possible solutions. It is imperative, therefore, that the studies already initiated be continued and that a program that will insure maximum efficiency in the utilization and production of physicians be agreed on at an early date.

RESIDENCY INFORMATION SERVICE

In this issue, the Council on Medical Education and Hospitals announces a new service for physicians and hospitals which should prove to be very helpful. Beginning next month, the Council will furnish to physicians, on request, a list of available residency positions in approved hospitals. This list will be revised monthly to provide current information to prospective applicants seeking appointments for residency training in the specialties. The lists will include pertinent data as to the number of positions open, date available, the name of the chief of service, the stipend paid and the person to whom application should be made.

Approved hospitals throughout the country have recently been notified of the availability of this service, and it is expected that a high proportion of those having vacancies will take advantage of this opportunity to reach a larger number of applicants than has previously been possible. Hospitals that are interested in being listed will be asked to supply essential information regarding the services on which vacancies exist. These positions will then be included in a monthly listing sent out by the Council. A simple method is being developed by which the residency will be omitted from subsequent lists as soon as the position has been filled.

The offering of this service by the Council is considered particularly appropriate at this time, in view of the number of medical officers who will have finished their period of military service during the coming months, many of whom will be seeking appointments for residency training. From the hospitals' standpoint as well, the announcement of this plan is considered timely, in view of the vacancies that are being created because of the number of residents who are being called into military service prior to completion of their training.

With the cooperation of the hospitals concerned, this service, as sponsored by the Council, should prove effective in helping to solve one of the problems resulting from the readjustment in medical manpower made necessary in the present emergency. The Council is to be commended on its foresight in anticipating the need for such a service and for developing it at this time.

6. Eagle, Fleischman and Musselman.[bd] Eagle, H., and Musselman, A. D.: The Rate of Bactericidal Action of Penicillin in Vitro as a Function of Its Concentration, and Its Paradoxically Reduced Activity at High Concentrations Against Certain Organisms, J. Exper. Med. 88: 99, 1948.

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ORGANIZATION SECTION

FEDERAL LEGISLATION

Chiropractic Care for Veterans

Senator Humphrey of Minnesota introduced, for Senator Magnuson of Washington, S. 1235, which would extend to persons entitled to receive medical care by or through the Veterans' Administration the right to elect to receive chiropractic treatment. The chief medical director of the VA would be required to make services of qualified chiropractors available on the request of patients. Senator Magnuson prepared the bill at the request of the director of the Veterans of Foreign Wars.

Maternity Benefits for Wives of Servicemen

S. 1245, introduced by Senator Humphrey of Minnesota, would establish a program of grants-in-aid to assist the states to provide maternity and infant care for the wives and infants of enlisted members of the Armed Forces during the present emergency. This bill is similar to the EMIC program in existence during World War II. The Children's Bureau of the Federal Security Agency would be authorized to make grants of federal funds to state programs which comply with directives of the administrator of FSA. Apportionment of funds among the several states would depend on financial needs of each state for assistance as determined by the administrator, who would take into consideration the number of live births to the wives of enlisted members of the Armed Forces residing in the various states. The provisions of the bill differ from the World War II program in the extent of coverage. The wives and children of all enlisted members of the Armed Forces could receive benefits. The EMIC program provided benefits only to the dependents of enlisted personnel in the four lowest pay grades. The provisions of the bill, if enacted into law, would terminate at the close of the fiscal year in which the President declares an end to the national emergency.

Hospital Construction

An amendment to the Hospital Survey and Construction Act (Hill-Burton) is proposed by Senator Nixon of California in S. 1257. His bill would permit the Surgeon General to make federal contribution under the Hill-Burton Act to projects started prior to formal acceptance of the state plan. A similar bill, H. R. 417, was introduced earlier this year.

Universal Military Training

Representative Anderson of California introduced H. R. 3453, which would provide for the common defense and security of the United States and would permit the more effective utilization of manpower resources of the United States by authorizing universal military training and service. This bill is practically identical in its provisions with the House Armed Services Committee bill, H. R. 2811, except that it is divided into two titles. Title I contains amendments to the Selective Service Act. Title II contains the provisions of a universal military training program. This separation of titles would facilitate the elimination of the universal military training provisions in the event the House membership so decides.

Federal Aid to Medical Education

Representative Kelley of Pennsylvania introduced H. R. 3511, which proposes to establish two federal medical schools. The bill creates a corporation within the Federal Security Agency with the name "Medical College of the United States." A medical college commission of seven members would be appointed by the Federal Security administrator on recommendation of the Surgeon General of the Public Health Service—members to be leading authorities in medical education or public health and no more than four affiliated with the same political party. The commission would select sites for two medical schools to accommodate 400 students each, with a teaching hospital of approximately 700 beds in connection with each. Fifty thousand dollars is authorized for a site survey, $2,000,000 for acquisition of land and $20,000,000 for construction of schools, hospitals and dormitories. A permanent appropriation of $3,000,000 annually would be authorized for costs of administration. Management of the two schools would be vested in a board of regents, consisting of the Surgeon General, Public Health Service; commissioner of education; chief medical officer, Department of Defense; chief medical officer of VA, ex-officio, and six other members to be appointed by the administrator (salaries of $15,000 annually). Three of these six would be members of the teaching profession. The regents would appoint for each school a president, comptroller, dean and hospital director. Students would be selected on the basis of competitive examinations and their willingness to serve on completion of their education for a period equal to the period of schooling in the Department of Defense, VA, Public Health Service or some other medical agency of the United States or in an area suffering a severe shortage of physicians, selected by the administrator. Graduates failing to so serve would be subject to payment of the cost of their education, not to exceed $750 per year.

The summary of federal legislation was prepared by the Washington Office of the American Medical Association and the summary of state legislation by the Bureau of Legal Medicine and Legislation.

STATE LEGISLATION

Arizona

Bill Enacted.—H. 85, has become Chapter 91 of the Laws of 1951. It **exempts from the basic science act** persons engaged in the full-time practice of medicine for federal, state, county, municipal or other governmental health departments and persons engaged in the full-time practice of medicine for federal or state hospitals or institutions. Upon the termination of such full-time practice, however, licenses issued on the basis of this exemption automatically become null and void and the individual must then satisfy the other requirements of the basic science act.

Arkansas

Bills Enacted.—H. 206, was approved March 26, 1951. It establishes the **office of state medical examiner** and prescribes powers and duties of such medical examiner with respect to investigations and autopsies. The state medical examiner shall be the head of the department of pathology of the University of Arkansas Medical School and he shall establish a laboratory having adequate facilities for the conduct of autopsies and of such pathological, bacteriological, toxicological examinations as may be necessary or proper. S. 383, has become Act 382 of the Acts of 1951. It **amends the chiropractic act** by increasing the number of hours which must be spent in chiropractic education in a chiropractic school from three years of nine academic months each or not less than 2,700 sixty-minute resident hours of instruction to four years of nine academic months each or not less than 3,600 sixty-minute resident hours of instruction.

Connecticut

Bill Introduced.—H. 1542, proposes that persons engaged in food handling occupations shall have **chest x-rays** once a year and shall present certificates from a licensed physician certifying that the individual is not suffering from pulmonary tuberculosis.

Delaware

Bill Introduced.—H. 443, proposes to empower the medical council of the state to issue **temporary emergency certificates,** said temporary emergency certificates to be limited to twelve months' duration, renewable at the discretion of the issuing authority, to such persons as it shall find qualified to practice in the state during the emergency period.

Florida

Bill Introduced.—S. 72, proposes regulations for the licensing of professional and practical **nursing.**

Idaho

Bill Enacted.—H. 101, has become Chapter 249 of the Laws of 1951. It fixes the annual registration fee for **chiropractors and osteopaths** at $10.

Illinois

Bills Introduced.—H. 501, proposes that no **medicament** sold or intended **for** sale for **internal consumption** which contains alcohol may be sold unless it is labeled and the alcoholic content is stated on the label. S. 268, proposes to amend the medical practice act by providing that it shall have no application to **osteopathic physician and surgeons.**

Indiana

Bill Enacted.—H. 199, has become Chapter 190 of the Laws of 1951. It provides for the **creation of a school of optometry** at Indiana University.

Iowa

Bill Introduced.—S. 492, proposes to amend the State Uniform Narcotic Drug Act by defining **narcotic drugs** so as to include amidone, isoamidone and keto-bemidone.

Kansas

Bill Enacted.—H. 164, was approved March 27, 1951. It authorizes a district judge to order the **exhumation of a body** of a deceased person for purposes of physical or chemical examination or analysis to ascertain the cause of death.

Maine

Bill Enacted.—S. 268, has become Chapter 97, Private and Special Laws, 1951. It authorizes the **establishment in the University of Maine of a College of Medicine** which shall meet the standards approved by the Council on Medical Education and Hospitals of the American Medical Association and of the Association of American Medical Colleges.

Maryland

Bill Enacted.—H. J. R. 3, was approved March 14, 1951. It recommends to the Director of Civilian Defense that he enlist the full cooperation and support of the **chiropractic** profession in whatever program is formulated for civilian defense.

Missouri

Bill Introduced.—S. R. 61, proposes the creation of a committee to inquire into activities involved in commercialized gambling and the **illegal narcotic's trade** in the state.

New Jersey

Bills Introduced.—A. J. R. 14, proposes the appointment of a commission to make a study of the laws dealing with the sale, dispensation and distribution of **narcotics** to determine whether or not any amendments are necessary to more effectively eliminate the illegal traffic and sale of narcotics within the state. A. 355, proposes that no person shall practice **vivisection** or perform any experiment upon a living animal in any of the elementary or secondary schools of the state either public or parochial or exhibit to any pupil in any such school an animal which has been vivisected or experimented upon.

New Mexico

Bills Enacted.—H. 28, was approved March 15, 1951. It amends the **medical practice act** by providing that nothing in that act shall be construed to prohibit any physician who has been lawfully licensed to practice in another state from entering into a contract with a New Mexico state institution to serve as a member of the medical staff exclusively, or from entering into a contract with an employer for the treatment of its employees only, provided such employer maintains a hospital for the benefit of its employees and provided the individual submits proof that he has received a notification by the medical examining board of New Mexico that he possesses the necessary character and qualifications. H. 136, has become Chapter 173 of the Laws of 1951. It makes it unlawful for any person to sell any "dangerous drug" except on the prescription of a licensed physician, dentist or veterinarian, with exceptions relating to wholesalers. The term dangerous drug is defined to include "hypnotic drug" (acetylurea derivatives, **barbituric acid derivatives,** chloral, paraldehyde, phenylhydantoin derivatives, sulfenmethane derivatives) aminopyrine, cinchophen, diethyl stilbestrol, ergot, cotton root, sulfanilamide, thyroid, and compounds of any of the drugs.

New York

Bill Introduced.—A. 2519, to amend the mental hygiene law in relation to certified examiners and **certified psychologists,** proposes that such person shall have had two years of postgraduate study in psychology including advanced courses in clinical and abnormal psychology and testing at an approved university or college and three years of full-time or equivalent part-time clinical experience in the psychological examination of children or mental defectives.

Bills Enacted.—A. R. 102, was adopted March 12, 1951. It provides for the creation of a joint legislative committee to make a study and survey of the social, educational and physical problems of individuals affected with **cerebral palsy.** A. 923, has become Chapter 600 of the Laws of 1951. It permits the use in court as evidence of photographic reproductions of **hospital records** under certain circumstances. A. 1955, has become Chapter 402 of the Laws of 1951. It amends the education law by requiring **practitioners of medicine** to register their certificates with the county clerk. S. 459, has become Chapter 453 of the Laws of 1951. It provides regulations for the **licensing of maternity or lying-in hospitals.** S. 2466, has become Chapter 489 of the Laws of 1951. It provides that whenever the Commissioner of Health shall deem that an emergency exists in the Department by reason of a **lack of sufficient number of physicians,** he may present evidence thereof to the Civil Service Commission which may determine the existence of an emergency and waive the requirements of the Civil Service Law as regards citizenship for physicians with the Department until such emergency ceases to exist. S. 2744, has become Chapter 590 of the Laws of 1951. It amends the law relating to the practice of **physio-therapy** by providing that the administration of physio-therapy by a person employed under the control of a licensed physician or licensed physio-therapist in his office, or in the Civil Service of the state, or any political sub-division thereof, or employee in a newly incorporated hospital or newly established clinic, or in an infirmary maintained by a person, firm or corporation employing one or more full-timed licensed physicians or licensed physio-therapists is not unlawful though done without a license.

Oklahoma

Bills Introduced.—H. 488 and S. 285 to amend the law relating to **non-profit hospital and medical corporations,** propose that no such corporation shall issue a policy or contract providing for hospitalization or medical treatment unless the policy or contract includes participation by any individual licensed in the healing arts and further provides that no contract shall exclude participation of any individuals licensed in the healing art. H. 510, proposes the establishment at the University hospital of a **psychiatry and neurology service** to provide the citizens of the state with a diagnostic and remedial psychiatry and neurology service.

Bill Enacted.—H. 30, was approved Feb. 26, 1951. It provides that if a person fails for three consecutive years to obtain a **renewal certificate of registration,** his original license to practice medicine or surgery shall be automatically suspended.

Oregon

Bills Enacted.—S. 161, was approved March 22, 1951. It provides for the creation of a State Board of Registration of **sanitarians** who are defined as persons trained in environmental sanitation, who are qualified to carry out educational and inspectional duties in the field of environmental sanitation. S. 271, was approved April 4, 1951. It provides for the creation of an Oregon State Board of **Massage Examiners** and defines massage as pressure on, friction against, stroking and kneeding the body and gymnastics with or without such appliances as vibrators, infrared heat, sun lamps and baths in order to maintain good health and to establish and maintain the body in good physical condition, provided that no person licensed under this act shall give chiropractic adjustment, osteopathic manipulations, or naturopathic manipulations.

Rhode Island

Bill Introduced.—H. 843, proposes that when a party to a lawsuit desires to make use of a **statement of fact or opinion** on a subject of science or art which is contained in a published treatise, periodical, book or pamphlet such person shall give the adverse party written notice of such intention, mentioning the name of the writer of the statement, not less than three days before the trial of the action.

Tennessee

Bills Enacted.—H. 1420, has become Chapter 571 of the Public Acts of 1951. It permits counties to enter into contracts with institutions public or private to render scientific and medical assistance in connection with law enforcement problems. The contracts may provide for the **performance of autopsies,** chemical and biological laboratory examinations, toxicological examinations, etc. S. 515, has become Chapter 194 of the Public Acts of 1951. It permits the use of **optometrists** for the examination of the eyes of applicants for aid to the blind when the applicant selects an optometrist to make the examination.

Texas

Bills Introduced.—H. 718, proposes to make it unlawful to sell by means of a vending machine, any drug, prophylactic or medicinal preparation which is capable of being used as a **contraceptive.** H. 720, to amend the penal code, proposes to make it a felony for any person to sell, give or barter or cause to be sold, given or bartered any **narcotic drug** to a minor under the age of eighteen.

Vermont

Bills Enacted.—H. 62, was approved March 21, 1951. It is a licensing law for the licensing and regulating of **practical nurses.** H. 155, was approved March 21, 1951. It amends the law relating to **osteopathy** by requiring applicants at the time of annual renewal of their license to present evidence that they attended a refresher course given by the Vermont Association of Osteopathic Physicians or its equivalent.

Washington

Bill Introduced.—H. 11X, proposes the creation as an agency of the state of an association to be known as the **Washington State Naturopathic Association.** All persons licensed to practice naturopathy in the state would be required to become a member of this Association and apparently the Association would do the licensing and regulating of naturopaths in the state. Section 1 of this proposal provides "Doctor. Naturopath. A healer. Diagnose and treat patients to stimulate and restore bodily processes and functions using a system of practice that employs physical, mechanical, chemical and psychological methods: utilizes dietetics, exercise, manipulation, chemical substances naturally found in and provided by living bodies, and healing properties of air, heat, water, light and electricity. Provides for care of bodily functions, processes or traumas and treats nervous or muscular tension; abnormalities of tissues, organs, muscles, joints, bones, and skin; pressure on nerves, blood vessels and lymphatics; and assists patients in making adjustments of a mental and emotional nature. Naturopathy excludes the use of major surgery, x-ray and radium for therapeutic purposes, and use of drugs with exception of those substances which are assimilable, contain elements or compounds which are components of bodily tissues, and are usable by body processes for maintenance of life."

Wisconsin

Bills Introduced.—S. 701, proposes to permit the board of medical examiners to make use of the **injunctive process** in enforcing the provisions of the medical practice act. S. 705, proposes the appointment of **county medical examiners** and sets forth the proposed duties of such county medical examiners.

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MEDICAL NEWS

ARKANSAS

Pediatric Course.—This course will be given at the University of Arkansas School of Medicine, Little Rock, by the pediatric department May 14 and 15, mainly for general practitioners. Dr. Myron E. Wegman, Louisiana State University School of Medicine, New Orleans, and Dr. Gilbert B. Forbes, Southwestern Medical School, Dallas, Texas, will be the guest speakers. No fee will be charged. Interested physicians, nurses and public health workers are invited to attend.

General Practitioners Meeting.—The annual meeting of the Arkansas Academy of General Practice is to be held at the Marion Hotel in Little Rock beginning at 2 p. m. April 22. Visiting speakers include:

Walter C. Alvarez, Chicago, The Future of *GP*.
John R. Bender, Winston-Salem, N. C., Society's Challenge to Modern Medicine.
Philip Thorek, Chicago, The Acute Abdomen.

The banquet will be held at 6:30 p. m.

CALIFORNIA

Speech Clinic Opened.—San Francisco's first clinic devoted exclusively to the care and training of the speech handicapped opened March 5 at the May T. Morrison Center for Rehabilitation. The clinic is under the direction of Mary Huber, Ph.D., who came to San Francisco from New York, where she was assistant professor of speech correction at Brooklyn College, speech consultant for the cerebral palsy preschool center at Lenox Hill Hospital and speech consultant to the New York State Association for Crippled Children. The Morrison speech clinic was made possible by a gift of $4,500 from R. H. Scanlon through the San Francisco Foundation, matched by a similar gift from the Rosenberg Foundation. The clinic will serve those handicapped by cleft lip and palate, aphasia, cerebral palsy, hemiplegia, stuttering, retarded speech and voice difficulties resulting from impaired hearing. Members of the Speech Therapy Advisory Committee are: Dr. Marcia Hays, chief of cerebral palsy division, department of public health; Leon Lassers, Ph.D., associate professor of education, San Francisco State College; Dr. Herbert Stoltz, director of special schools and special services to the handicapped, Bureau of Vocational Rehabilitation; Virgil Anderson, Ph.D., director of speech and hearing clinic, Stanford University; and Dr. Robert C. Martin, Dr. Harry M. Blackfield, of San Francisco, Mr. S. Waldo Coleman and Mr. Nathan Nelson, assistant district supervisor, Bureau of Vocational Rehabilitation.

CONNECTICUT

State Medical Meeting at Stratford.—The annual meeting of the Connecticut State Medical Society will be held at the Stratford High School in Stratford May 1-3 and will feature clinical lectures by 34 medical specialists and educators. Guest speakers will be:

David J. Graubard, New York, Use of Intravenous Procaine in Disaster.
Richard L. Meiling, Washington, D. C., The Medical Profession's Efforts in the Military Expansion Program.
Burrill B. Crohn, New York, Inflammatory Diseases of the Small Intestine.
Charles L. Dunham, Washington, D. C., Medical Aspects of Atomic Warfare.
Mr. Harold L. Goodwin, Washington, D. C., Civilian Defense Organization for the Mass Casualty Problem.
Winthrop M. Phelps, Baltimore, Cerebral Palsy.
Elmer L. Sevringhaus, Essex Fells, N. J., Uses and Limitations of Endocrine Therapy.
Irvine H. Page, Cleveland, Nature and Treatment of Hypertension.

On Thursday afternoon Dr. John C. Leonard, Hartford, will preside at a symposium on "Arteriosclerosis and Aging." Dr. Siegfried J. Thannhauser, Boston, will speak on "Cholesterol and Arteriosclerosis" and Dr. Page on "The Physiology of Hypertension in Arteriosclerosis." Section meetings will be held, and some state specialty societies have scheduled meetings. The annual dinner of the society will be held at the Hotel Stratfield in Bridgeport Wednesday evening. Mr. William Hillman of the Washington Bureau, The Crowell-Collier Publishing Company, will speak on "The International News Front." The Woman's Auxiliary will meet Wednesday at the Brooklawn Country Club in Bridgeport.

FLORIDA

Seminar in Cardiovascular Disease.—Physicians throughout this country and Cuba are being invited to the First Annual Medical Seminar of Mount Sinai Hospital May 23-25 at the Sorrento Hotel in Miami Beach. Under discussion will be heart and peripheral vascular diseases from the medical, surgical, physiological and pathological points of view. Guest speakers will include:

David I. Abramson, Chicago, Physiology and Physio-Pathology of Peripheral Vessels, and Functional Vascular Diseases.
Claude S. Beck, Cleveland, Operation for Coronary Artery Disease.
Samuel Bellet, Philadelphia, Effect of Electrolyte Alterations on the Heart, and Treatment of Cardiac Arrhythmias.
John W. Gofman, San Francisco, Biophysical Methodology and Its Application to Medical Research, and Studies of Arteriosclerosis Utilizing Biophysical Approaches.
Seymour S. Kety, Philadelphia, Circulation and Metabolism of the Brain in Health and Disease.
Charles W. Robertson, Boston, Peripheral Vascular Disorders.
Otto Saphir, Chicago, Pathology of Arteriosclerosis, and Collagen Alterations in Rheumatic Heart Disease.

A banquet will be held May 23. Golfing, swimming, fishing and sightseeing parties are being provided for physicians and their wives. Registrations for the seminar will be limited to 200 physicians. The fee is $20 for practicing physicians and $7 for interns and residents. Those fees include the cocktail party and banquet. For information address the Chairman, Seminar Committee, Mount Sinai Hospital, 4300 Alton Road, Miami Beach.

ILLINOIS

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Walter L. Bierring, Des Moines, Iowa, The Practicing Physician and Public Health.
Claude S. Beck, Cleveland, Operation for Coronary Artery Disease.
Conrad G. Collins, New Orleans, Complications of the Puerperium.
Frank W. Konzelmann, Washington, D. C., A Discriminative Selection of Laboratory Studies in the Diagnosis of Disease.
Lloyd E. Harris, Rochester, Minn., Infant Feeding With and Without Added Carbohydrates.
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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Iowa

Bill Introduced.—S. 492, proposes to amend the State Uniform Narcotic Drug Act by defining **narcotic drugs** so as to include amidone, isoamidone and keto-bemidone.

Kansas

Bill Enacted.—H. 164, was approved March 27, 1951. It authorizes a district judge to order the **exhumation of a body** of a deceased person for purposes of physical or chemical examination or analysis to ascertain the cause of death.

Maine

Bill Enacted.—S. 268, has become Chapter 97, Private and Special Laws, 1951. It authorizes the **establishment in the University of Maine of a College of Medicine** which shall meet the standards approved by the Council on Medical Education and Hospitals of the American Medical Association and of the Association of American Medical Colleges.

Maryland

Bill Enacted.—H. J. R. 3, was approved March 14, 1951. It recommends to the Director of Civilian Defense that he enlist the full cooperation and support of the **chiropractic** profession in whatever program is formulated for civilian defense.

Missouri

Bill Introduced.—S. R. 61, proposes the creation of a committee to inquire into activities involved in commercialized gambling and the **illegal narcotic's trade** in the state.

New Jersey

Bills Introduced.—A. J. R. 14, proposes the appointment of a commission to make a study of the laws dealing with the sale, dispensation and distribution of **narcotics** to determine whether or not any amendments are necessary to more effectively eliminate the illegal traffic and sale of narcotics within the state. A. 355, proposes that no person shall practice **vivisection** or perform any experiment upon a living animal in any of the elementary or secondary schools of the state either public or parochial or exhibit to any pupil in any such school an animal which has been vivisected or experimented upon.

New Mexico

Bills Enacted.—H. 28, was approved March 15, 1951. It amends the **medical practice act** by providing that nothing in that act shall be construed to prohibit any physician who has been lawfully licensed to practice in another state from entering into a contract with a New Mexico state institution to serve as a member of the medical staff exclusively, or from entering into a contract with an employer for the treatment of its employees only, provided such employer maintains a hospital for the benefit of its employees and provided the individual submits proof that he has received a notification by the medical examining board of New Mexico that he possesses the necessary character and qualifications. H. 136, has become Chapter 173 of the Laws of 1951. It makes it unlawful for any person to sell any "dangerous drug" except on the prescription of a licensed physician, dentist or veterinarian, with exceptions relating to wholesalers. The term dangerous drug is defined to include "hypnotic drug" (acetylurea derivatives, **barbituric acid derivatives,** chloral, paraldehyde, phenylhydantoin derivatives, sulfenmethane derivatives) aminopyrine, cinchophen, diethyl stilbestrol, ergot, cotton root, sulfanilamide, thyroid, and compounds of any of the drugs.

New York

Bill Introduced.—A. 2519, to amend the mental hygiene law in relation to certified examiners and **certified psychologists,** proposes that such person shall have had two years of postgraduate study in psychology including advanced courses in clinical and abnormal psychology and testing at an approved university or college and three years of full-time or equivalent part-time clinical experience in the psychological examination of children or mental defectives.

Bills Enacted.—A. R. 102, was adopted March 12, 1951. It provides for the creation of a joint legislative committee to make a study and survey of the social, educational and physical problems of individuals affected with **cerebral palsy.** A. 923, has become Chapter 600 of the Laws of 1951. It permits the use in court as evidence of photographic reproductions of **hospital records** under certain circumstances. A. 1955, has become Chapter 402 of the Laws of 1951. It amends the education law by requiring **practitioners of medicine** to register their certificates with the county clerk. S. 459, has become Chapter 453 of the Laws of 1951. It provides regulations for the **licensing of maternity or lying-in hospitals.** S. 2466, has become Chapter 489 of the Laws of 1951. It provides that whenever the Commissioner of Health shall deem that an emergency exists in the Department by reason of a **lack of sufficient number of physicians,** he may present evidence thereof to the Civil Service Commission which may determine the existence of an emergency and waive the requirements of the Civil Service Law as regards citizenship for physicians with the Department until such emergency ceases to exist. S. 2744, has become Chapter 590 of the Laws of 1951. It amends the law relating to the practice of **physio-therapy** by providing that the administration of physio-therapy by a person employed under the control of a licensed physician or licensed physio-therapist in his office, or in the Civil Service of the state, or any political sub-division thereof, or employee in a newly incorporated hospital or newly established clinic, or in an infirmary maintained by a person, firm or corporation employing one or more full-timed licensed physicians or licensed physio-therapists is not unlawful though done without a license.

Oklahoma

Bills Introduced.—H. 488 and S. 285 to amend the law relating to **non-profit hospital and medical corporations,** propose that no such corporation shall issue a policy or contract providing for hospitalization or medical treatment unless the policy or contract includes participation by any individual licensed in the healing arts and further provides that no contract shall exclude participation of any individuals licensed in the healing art. H. 510, proposes the establishment at the University hospital of a **psychiatry and neurology service** to provide the citizens of the state with a diagnostic and remedial psychiatry and neurology service.

Bill Enacted.—H. 30, was approved Feb. 26, 1951. It provides that if a person fails for three consecutive years to obtain a **renewal certificate of registration,** his original license to practice medicine or surgery shall be automatically suspended.

Oregon

Bills Enacted.—S. 161, was approved March 22, 1951. It provides for the creation of a State Board of Registration of **sanitarians** who are defined as persons trained in environmental sanitation, who are qualified to carry out educational and inspectional duties in the field of environmental sanitation. S. 271, was approved April 4, 1951. It provides for the creation of an Oregon State Board of **Massage Examiners** and defines massage as pressure on, friction against, stroking and kneeding the body and gymnastics with or without such appliances as vibrators, infrared heat, sun lamps and baths in order to maintain good health and to establish and maintain the body in good physical condition, provided that no person licensed under this act shall give chiropractic adjustment, osteopathic manipulations, or naturopathic manipulations.

Rhode Island

Bill Introduced.—H. 843, proposes that when a party to a lawsuit desires to make use of a **statement of fact or opinion** on a subject of science or art which is contained in a published treatise, periodical, book or pamphlet such person shall give the adverse party written notice of such intention, mentioning the name of the writer of the statement, not less than three days before the trial of the action.

Tennessee

Bills Enacted.—H. 1420, has become Chapter 571 of the Public Acts of 1951. It permits counties to enter into contracts with institutions public or private to render scientific and medical assistance in connection with law enforcement problems. The contracts may provide for the **performance of autopsies,** chemical and biological laboratory examinations, toxicological examinations, etc. S. 515, has become Chapter 194 of the Public Acts of 1951. It permits the use of **optometrists** for the examination of the eyes of applicants for aid to the blind when the applicant selects an optometrist to make the examination.

Texas

Bills Introduced.—H. 718, proposes to make it unlawful to sell by means of a vending machine, any drug, prophylactic or medicinal preparation which is capable of being used as a **contraceptive.** H. 720, to amend the penal code, proposes to make it a felony for any person to sell, give or barter or cause to be sold, given or bartered any **narcotic drug** to a minor under the age of eighteen.

Vermont

Bills Enacted.—H. 62, was approved March 21, 1951. It is a licensing law for the licensing and regulating of **practical nurses.** H. 155, was approved March 21, 1951. It amends the law relating to **osteopathy** by requiring applicants at the time of annual renewal of their license to present evidence that they attended a refresher course given by the Vermont Association of Osteopathic Physicians or its equivalent.

Washington

Bill Introduced.—H. 11X, proposes the creation as an agency of the state of an association to be known as the **Washington State Naturopathic Association.** All persons licensed to practice naturopathy in the state would be required to become a member of this Association and apparently the Association would do the licensing and regulating of naturopaths in the state. Section 1 of this proposal provides "Doctor. Naturopath. A healer. Diagnose and treat patients to stimulate and restore bodily processes and functions using a system of practice that employs physical, mechanical, chemical and psychological methods: utilizes dietetics, exercise, manipulation, chemical substances naturally found in and provided by living bodies, and healing properties of air, heat, water, light and electricity. Provides for care of bodily functions, processes or traumas and treats nervous or muscular tension; abnormalities of tissues, organs, muscles, joints, bones, and skin; pressure on nerves, blood vessels and lymphatics; and assists patients in making adjustments of a mental and emotional nature. Naturopathy excludes the use of major surgery, x-ray and radium for therapeutic purposes, and use of drugs with exception of those substances which are assimilable, contain elements or compounds which are components of bodily tissues, and are usable by body processes for maintenance of life."

Wisconsin

Bills Introduced.—S. 701, proposes to permit the board of medical examiners to make use of the **injunctive process** in enforcing the provisions of the medical practice act. S. 705, proposes the appointment of **county medical examiners** and sets forth the proposed duties of such county medical examiners.

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MEDICAL NEWS

ARKANSAS

Pediatric Course.—This course will be given at the University of Arkansas School of Medicine, Little Rock, by the pediatric department May 14 and 15, mainly for general practitioners. Dr. Myron E. Wegman, Louisiana State University School of Medicine, New Orleans, and Dr. Gilbert B. Forbes, Southwestern Medical School, Dallas, Texas, will be the guest speakers. No fee will be charged. Interested physicians, nurses and public health workers are invited to attend.

General Practitioners Meeting.—The annual meeting of the Arkansas Academy of General Practice is to be held at the Marion Hotel in Little Rock beginning at 2 p. m. April 22. Visiting speakers include:

Walter C. Alvarez, Chicago, The Future of *GP*.
John R. Bender, Winston-Salem, N. C., Society's Challenge to Modern Medicine.
Philip Thorek, Chicago, The Acute Abdomen.

The banquet will be held at 6:30 p. m.

CALIFORNIA

Speech Clinic Opened.—San Francisco's first clinic devoted exclusively to the care and training of the speech handicapped opened March 5 at the May T. Morrison Center for Rehabilitation. The clinic is under the direction of Mary Huber, Ph.D., who came to San Francisco from New York, where she was assistant professor of speech correction at Brooklyn College, speech consultant for the cerebral palsy preschool center at Lenox Hill Hospital and speech consultant to the New York State Association for Crippled Children. The Morrison speech clinic was made possible by a gift of $4,500 from R. H. Scanlon through the San Francisco Foundation, matched by a similar gift from the Rosenberg Foundation. The clinic will serve those handicapped by cleft lip and palate, aphasia, cerebral palsy, hemiplegia, stuttering, retarded speech and voice difficulties resulting from impaired hearing. Members of the Speech Therapy Advisory Committee are: Dr. Marcia Hays, chief of cerebral palsy division, department of public health; Leon Lassers, Ph.D., associate professor of education, San Francisco State College; Dr. Herbert Stoltz, director of special schools and special services to the handicapped, Bureau of Vocational Rehabilitation; Virgil Anderson, Ph.D., director of speech and hearing clinic, Stanford University; and Dr. Robert C. Martin, Dr. Harry M. Blackfield, of San Francisco, Mr. S. Waldo Coleman and Mr. Nathan Nelson, assistant district supervisor, Bureau of Vocational Rehabilitation.

CONNECTICUT

State Medical Meeting at Stratford.—The annual meeting of the Connecticut State Medical Society will be held at the Stratford High School in Stratford May 1-3 and will feature clinical lectures by 34 medical specialists and educators. Guest speakers will be:

David J. Graubard, New York, Use of Intravenous Procaine in Disaster.
Richard L. Meiling, Washington, D. C., The Medical Profession's Efforts in the Military Expansion Program.
Burrill B. Crohn, New York, Inflammatory Diseases of the Small Intestine.
Charles L. Dunham, Washington, D. C., Medical Aspects of Atomic Warfare.
Mr. Harold L. Goodwin, Washington, D. C., Civilian Defense Organization for the Mass Casualty Problem.
Winthrop M. Phelps, Baltimore, Cerebral Palsy.
Elmer L. Sevringhaus, Essex Fells, N. J., Uses and Limitations of Endocrine Therapy.
Irvine H. Page, Cleveland, Nature and Treatment of Hypertension.

On Thursday afternoon Dr. John C. Leonard, Hartford, will preside at a symposium on "Arteriosclerosis and Aging." Dr. Siegfried J. Thannhauser, Boston, will speak on "Cholesterol and Arteriosclerosis" and Dr. Page on "The Physiology of Hypertension in Arteriosclerosis." Section meetings will be held, and some state specialty societies have scheduled meetings. The annual dinner of the society will be held at the Hotel Stratfield in Bridgeport Wednesday evening. Mr. William Hillman of the Washington Bureau, The Crowell-Collier Publishing Company, will speak on "The International News Front." The Woman's Auxiliary will meet Wednesday at the Brooklawn Country Club in Bridgeport.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Seminar in Cardiovascular Disease.—Physicians throughout this country and Cuba are being invited to the First Annual Medical Seminar of Mount Sinai Hospital May 23-25 at the Sorrento Hotel in Miami Beach. Under discussion will be heart and peripheral vascular diseases from the medical, surgical, physiological and pathological points of view. Guest speakers will include:

David I. Abramson, Chicago, Physiology and Physio-Pathology of Peripheral Vessels, and Functional Vascular Diseases.
Claude S. Beck, Cleveland, Operation for Coronary Artery Disease.
Samuel Bellet, Philadelphia, Effect of Electrolyte Alterations on the Heart, and Treatment of Cardiac Arrhythmias.
John W. Gofman, San Francisco, Biophysical Methodology and Its Application to Medical Research, and Studies of Arteriosclerosis Utilizing Biophysical Approaches.
Seymour S. Kety, Philadelphia, Circulation and Metabolism of the Brain in Health and Disease.
Charles W. Robertson, Boston, Peripheral Vascular Disorders.
Otto Saphir, Chicago, Pathology of Arteriosclerosis, and Collagen Alterations in Rheumatic Heart Disease.

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Honor Dr. Stillians.—The Metropolitan Dermatological Society of Chicago announces the establishment of the Arthur William Stillians Lectureship. Dr. Stillians, now professor emeritus, headed Northwestern University Medical School's department of dermatology and syphilology from 1919 until 1940. He organized the first postgraduate department of dermatology in Chicago. The lecture will be given at the annual meeting of the society.

Dr. Gilbert to Direct Teaching Program at County Hospital.—Dr. Robert P. Gilbert has joined the Northwestern University Medical School faculty as director of the university's teaching program at Cook County Hospital. He will perform duties in administration, teaching and research. As head of the teaching program he will direct the course work conducted at the hospital by the medical school's department of medicine. He also will continue his previous research work on heart ailments, specializing in coronary thrombosis study.

INDIANA

Appoint State Hospital Superintendent.—Dr. Juul C. Nielsen of Hastings, Neb., superintendent of the Hastings State Hospital, Ingleside, has been named superintendent of the new LaRue D. Carter Memorial Hospital in Indianapolis. The $5,000,000 hospital is for screening patients with mental illnesses. Although the hospital will not be completed until fall, Dr. Nielson will assume his duties on June 1, recruiting a staff of physicians, nurses and other professional persons in psychiatry. He will also serve as medical director of the Indiana Council of Mental Health, which supervises all Indiana's mental institutions. Dr. Nielson has been head of the Hastings hospital for 18 years.

MASSACHUSETTS

Award Medal to Dr. Keefer.—The annual meeting of the Boston City Hospital Alumni Association will be held April 28. The presentation of the General Leonard Wood Medal "for distinguished contribution to Medicine and Humanity" will be made to Dr. Chester S. Keefer, Boston, Wade Professor of Medicine at Boston University. Previous recipients of the medal have been Drs. Elliott P. Joslin, Frank H. Lahey and William B. Castle. This meeting has been arranged in recognition of the tenth anniversary of Dr. Keefer's directorship of the Evans Memorial Department of Massachusetts Memorial Hospital and tenure of the Wade Professorship of Medicine at the Boston University School of Medicine. Speakers at the scientific session in the auditorium of the university are as follows:

William M. Castle, Boston, Speculations Concerning the Etiology of Polycythemia Vera.
John J. Curry, Washington, D. C., Current Concepts of the Mechanism of Cardiac Asthma.
Maxwell Finland, Boston, Influenza and Pneumonia.
J. Murray Steele, New York, Body Water and Its Subdivisions.
Frederick F. Yonkman, Summit, N. J., Mental Gymnastics and Mental Gyrations.
Dr. Keefer, Boston, Some Advances in Therapeutic Research.

MICHIGAN

Phi Delta Epsilon Lecture.—The Alpha Delta Chapter of Phi Delta Epsilon of Wayne University, Detroit, will hear Dr. Alexander S. Wiener, New York, speak on "Recent Studies on the Rh-Hr and Other Blood Group Antibodies and Their Implication for Clinical Medicine, Immunology, Genetics, and Anthropology." This third annual fraternity lecture will be held in the auditorium of the university college of medicine at 11:00 a. m. April 25. The medical profession is cordially invited.

Medical-Personal Relations in Industry.—The University of Michigan School of Public Health, Ann Arbor, is offering a discussion on Medical-Personal Relations in Industry May 17-19. Subjects of panel discussions the first day are: Nature and Extent of Personality Problems in Industry, and Identification and Diagnosis of Personality Problems in Industry; the second day, Training of Medical Staff for Interviewing, and Clinical Psychology in Industry, and on the third morning, Problem of Aging in Industry. Physicians in charge of industrial medical departments and medical assistants, psychiatrists, psychologists and other staff members, when designated by the physician in charge, are eligible. Applications for enrolment in the discussional should be submitted by letter addressed to Mr. Harry E. Miller, Director of Continued Education, School of Public Health. The facilities available necessitate limitation of attendance to 50. The enrolment fee is $10.

MINNESOTA

Physicians Art Exhibit.—The second annual exhibit of the Minnesota Physicians Art Association will be held during the meeting of the Minnesota State Medical Association in Rochester April 30 through May 2. The exhibit will be at the Rochester Art Center.

First Fahr Lecture.—Dr. George E. Burch, professor and chairman of the department of medicine, Tulane University of Louisiana School of Medicine, New Orleans, will deliver the first George E. Fahr Lecture May 8 on the University of Minnesota campus in Minneapolis. The annual lectureship is financed through a gift which former students of Dr. Fahr have presented to the Minnesota Medical Foundation. Dr. Burch will also participate in a continuation course in electrocardiography presented for physicians on May 7-11 at the Center for Continuation Study.

State Medical Meeting at Rochester.—The Minnesota State Medical Association will convene in annual session April 30-May 2 at the Hotel Kahler, Rochester, under the presidency of Dr. John F. Norman of Crookston. General sessions will be held in the Mayo Civic Auditorium. The meeting will open with a symposium on Fractures followed by a symposium on Cortisone and pituitary adrenocorticotropic hormone (ACTH). Symposiums on Pulmonary Diseases and on Acute Abdominal Conditions will be held Tuesday afternoon. Cardiac and Peripheral Vascular Diseases will be discussed Wednesday morning and Allergies in the afternoon. The Russell D. Carman Memorial Lecture will be given by Dr. Wendell G. Scott, associate professor of clinical radiology at Washington University School of Medicine, St. Louis. The Arthur H. Sanford Lectureship in Pathology will be given by Dr. Paul W. Schafer, professor of surgery and chairman of the department at the University of Kansas School of Medicine, Kansas City. Other visiting speakers include: Dr. Howard B. Sprague, president of the American Heart Association, Brookline, Mass., "Diagnostic Pitfalls in Cardiology"; Dr. Bram Rose, Montreal, Canada, "Physiological Basis of Allergy"; Dr. John A. Anderson, San Francisco, "Rheumatic Fever-Determination of Activity," and Drs. Thomas K. Brown, St. Louis, and Gerald W. Gustafson, Indianapolis, who will give obstetric manikin demonstrations.

The annual banquet will be at the Valencia Hotel Tuesday evening. The guest speaker will be Dr. John W. Cline, San Francisco, President-Elect of the American Medical Association. He will speak on "Problems Confronting Medicine in the Immediate Future." A series of 21 roundtable discussion luncheons have been arranged, and medical films will be shown each day. A number of state societies will hold meetings. The Woman's Auxiliary to the medical association will have its headquarters at the Hotel Kahler.

MISSOURI

Memorial Lecture.—Menorah Hospital of Kansas City is inaugurating an annual Memorial Lecture April 25. The speaker will be Dr. Samuel C. Bukantz, assistant dean of Washington University School of Medicine, St. Louis. His subject will be "A Conception of the Pathogenesis and Rational Management of Diffuse Collagen Disease."

Wohl Memorial Hospital.—Construction started early in March on the 10 story David P. Wohl Jr. Memorial Hospital in the Washington University Medical Center, St. Louis. It will provide a maximum of 82 hospital beds and facilities for teaching and research. The building will be adjacent to the Nurses' Home of the School of Nursing and will have ground floor connecting corridors with the Edward Mallinckrodt Institute of Radiology and other buildings in the Medical Center. The hospital, of reinforced concrete and steel frame, is so designed that three additional stories can be added in the future. Air

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conditioned classrooms on the ground floor have been provided. The hospital, which is expected to be completed late in 1952, is named in honor of Lieut. David P. Wohl Jr., who was killed in 1944 in a bombing raid over Germany. Wohl's father, Mrs. Wohl, the Wohl Foundation and the Wohl Shoe Company have contributed $850,000 toward construction of the hospital. An additional grant of $325,000 was provided by the U. S. Public Health Service, with the School of Medicine supplying the additional amount.

NEBRASKA

Bryan Hospital Anniversary.—The Bryan Memorial Hospital, Lincoln, observed its silver anniversary March 27. The speakers were Drs. George F. O'Brien and Richard K. Gilchrist, both of Chicago; Dr. Harold C. Lueth, Omaha; Dr. A. James French, Battle Creek, Mich., and Dr. Thomas J. Dry, Rochester, Minn. The banquet speaker was Dr. Austin Smith, Editor of THE JOURNAL, Chicago, who spoke on "The Health Significance of Recent Medical Advances."

NEW JERSEY

Society News.—The Morris County Medical Society at its meeting April 19 heard Judge Albert H. Holland speak on "The Doctor in Adoptions." Judge Holland is a member of the New Jersey State Parole Board and of the Adoption Committee of the Council of Social Agencies. A second speaker, Dr. Sidney C. Werner, New York, spoke on "Use of Radioactive Iodine in Treatment and Diagnosis of Thyroidism."

State Meeting at Atlantic City.—The Medical Society of the State of New Jersey will hold its annual meeting in Haddon Hall, Atlantic City, May 14-16, under the presidency of Dr. Aldrich C. Crowe, Ocean City. The program has been divided into section meetings on medicine and surgery. At the general session Tuesday evening at 8:30 there will be a panel discussion on "Civil Medical Defense" with Dr. Andrew F. McBride Jr., Patterson, serving as moderator. Participants will be: Leonard Dreyfuss, director, New Jersey civil defense organization, and Drs. Daniel Bergsma, Trenton, James C. Sargent, Milwaukee, and Norvin C. Kiefer, Washington, D. C. Sectional luncheons will be held on Monday and Tuesday, and scientific, educational and technical exhibits will be displayed.

NEW YORK

Postgraduate Instruction.—The following programs have been arranged by the Medical Society of the State of New York in cooperation with the New York State Department of Health. The Greene County Medical Society, meeting May 8 at 9:00 p. m. at the Greene County Memorial Hospital in Catskill, will hear Dr. David Scherf, New York, speak on "Diagnosis and Therapy of Angina on Effort." On May 10 Dr. George T. Pack, New York, will address the Glen Falls Academy of Medicine meeting at 8:00 p. m. at the Crandall Free Library in Glen Falls on "Cancer of the Breast." A series of lectures are being presented to the Chenango County Medical Society on Wednesdays at 4:30 p. m. at the Norwich Club, Norwich:

April 25, David S. Baldwin, New York, New Concepts and Therapy of Hypertension.
May 9, Carl H. Greene, New York, Differential Diagnosis and Treatment of Jaundice.
May 16, Edwin P. Maynard Jr., Brooklyn, Heart Disease and Major Surgery.

State Medical Meeting in Buffalo.—The annual meeting of the Medical Society of the State of New York will be held April 30-May 4 at the Hotel Statler, Buffalo. The afternoon of May 1 will be devoted to discussing civil defense. Dr. Herman E. Hilleboe, state health commissioner, Dr. Marcus D. Kogel, commissioner of hospitals of New York City, Dr. John J. Masterson, Brooklyn, chairman of the state medical society's committee on emergency preparedness, and Dr. E. Dean Babbage of the University of Buffalo School of Medicine will speak. The first half of the "Teaching Day" program, beginning at 10: 00 a. m. May 1, will consist of a panel discussion, "The Doctor, the Hospital and the Community," with Dr. Norman S. Moore of Ithaca as moderator. Participants will be Vernon Reed, Dr. Max Cheplove, both of Buffalo, and Mrs. Terence Holliday and Dr. Thomas D. Dublin, both of New York. General scientific sessions will be held Wednesday afternoon and Friday afternoon, when Dr. Peter H. Forsham, Boston, will deliver the A. Walter Suiter Lecture on "The Interrelationship and Role in Bodily Function of the Pituitary and Its Target Glands." The 16 sections will meet Wednesday, Thursday and Friday morning. Sessions on General Practice and History of Medicine will meet Thursday afternoon. The Woman's Auxiliary will meet in conjunction with the association.

New York City

Friesner Lecture.—Dr. Julius Lempert of the Lempert Institute of Otology and the Lempert Research Foundation will deliver the Isidore Friesner Lecture of The Mount Sinai Hospital, New York, April 24 at 8:30 p. m. in the Blumenthal Auditorium. His subject will be "Otology, Its Present Status."

Cornell Alumni Meeting.—At the annual meeting of the Cornell Medical College Alumni April 20-21 in New York Dr. Austin Smith, Chicago, Editor of THE JOURNAL, spoke on "The Effect of Medicine in the Future." Other speakers were Dr. Harry H. Gordon, professor of pediatrics at the University of Colorado School of Medicine, Denver, and Dr. William D. Holden, professor of surgery at Western Reserve University, Cleveland, both Cornell graduates. The annual award to a graduate of the college "for distinguished service to medicine" was conferred on Dr. Connie M. Guion, professor of clinical medicine at Cornell. A full two day medical program was arranged for visiting alumni.

Concert by Doctor's Orchestra.—This symphonic group of 65 members will present a concert April 29 at Town Hall under the auspices of the Physicians' Wives' League of New York. The society, established in 1938, consists of physicians, dentists and members of the allied professions. It meets and rehearses every Thursday evening throughout the year. Playing members of the professions are cordially invited to join the group. Information may be obtained at the office of the president, Dr. Sidney Le Robbins, 30 East 60th Street. In the past the Doctor's Orchestral Society has given annual concerts for many worthy causes such as the New York University-Bellevue Medical Center, Roosevelt Hospital, the Physician's Home, the Veterans Administration hospitals and others. Famous artists have played with the group at previous concerts, but this year the society has decided to show what the doctors can do as soloists and performers.

OKLAHOMA

State Medical Meeting in Tulsa.—At the annual meeting of the Oklahoma State Medical Association in Tulsa May 21-23 Dr. John W. Cline, San Francisco, President-Elect of the American Medical Association, will address a public relations luncheon on May 21, and Dr. R. B. Robins of Camden, Ark., Vice-President of the American Medical Association, will be guest speaker for the President's Annual Dinner Dance May 22. The guest speakers for the scientific program include Drs. Elliott P. Joslin, Boston; Lester R. Dragstedt, Chicago; Ramon Castroviejo, New York; Howard T. Karsner, the Navy, Washington, D. C.; Ernest E. Muirhead, Dallas, Texas; James G. Hughes, Memphis, Tenn.; Harrison L. McLaughlin, New York, and Dr. John L. McKelvey, Minneapolis. A symposium on the medical military situation, scheduled for May 23, will feature Brig. Gen. Paul I. Robinson, Washington, D. C., and Col. Richard H. Eanes, M.C., Washington, D. C. The President's Annual Dinner Dance will be held at the Tulsa Club.

PENNSYLVANIA

Air Ambulance Service.—Air ambulances are available to physicians in the state to speed sick or injured to hospitals, according to a directory issued by the Civil Aeronautics Administration and distributed to all county medical societies and leading hospitals in the state. Ambulance planes are based at 10 airports listed in the directory. Charges for this service vary with the type of plane used and are based in most instances on an hourly rate. Copies of the directory are available on request to the Office of the State Medical Society, 230 State Street, Harrisburg.

Philadelphia

Pennsylvania Hospital 200th Anniversary.—The Pennsylvania Hospital, Philadelphia, is celebrating its 200th Anniversary Year during 1951. The annual Ex-Residents Day will be celebrated May 2 with a luncheon at the Benjamin Franklin Clinic and a banquet in the evening. The program on this day will be presented by ex-internes and ex-residents, including the following: Ralph W. Trimmer, Chicago; Timothy R. Talbot Jr. and Conrad Berens, New York; William B. Kiesewetter, C. Everett Koop and J. Russell Elkington, Philadelphia; Howard E. and Cecil D. Snyder, Winfield, Kan.; William W. Cadbury, Moorestown, N. J.; Robert C. Hartmann, Baltimore; John T. F. Gallagher, Madison, Wis.; Sherman Little, Buffalo; Ashton T. Stewart, Tabriz, Iran; Joseph C. Edwards, St. Louis; Daniel J. Preston, Wilmington, Del.; Robert R. Impink, Reading, Pa., and William W. L. Glenn, New Haven, Conn. On Thursday the following physicians will present lectures or clinics: Dr. Waltman Walters, Rochester, Minn.; Drs. John H. Gibbon Jr., Robert D. Dripps, Earl D. Bond and Isadore S. Ravdin, Philadelphia; Dr. John R. Paul, New Haven, Conn.; Dr. John S. L. Browne, Montreal, Canada; Dr. Elliot P. Joslin, Boston, and William S. Middleton, Madison, Wis. On Friday lectures or clinics will be given by the following: Drs. Warfield T. Longcope, Baltimore; Bardley L. Coley, New York; Joseph M. Hayman Jr., Cleveland; Henry M. Thomas Jr., Baltimore; Charles B. Huggins, Chicago; Edward B. Krumbhaar and O. H. Perry Pepper, Philadelphia; Everett I. Evans, Richmond, and Graham Hayward, London, England. All physicians are invited.

TEXAS

Annual State Meeting in Galveston.—The annual session of the State Medical Association of Texas will be held May 1-2 in Galveston, under the presidency of Dr. William M. Gambrell, Austin. Scientific activities will be housed in the Pleasure Pier and Buccaneer and Galvez hotels. Dr. George G. Finney, Baltimore, will speak at the opening general meeting on "Lesions of the Breast," and George Smathers, junior U. S. Senator from Florida, will address the same session. The Honorable Martin Dies, Lufkin, former Congressman, has been invited to speak at the General Meeting Luncheon on Wednesday. The program has been divided into section meetings for the specialties. Clinical luncheons will be held from 12:15 to 2:00 p. m. Ten physicians will act as experts to whom puzzling questions can be posed: Drs. Arild E. Hansen, Galveston, pediatrics; Hardy A. Kemp, Houston, public health; Charles L. Martin, Dallas, radiology; Tate Miller, Dallas, general practice, and Henry M. Winans, Dallas, internal medicine, will participate in the General Practice, Medicine and Pediatrics Luncheon. Drs. Charles T. Ashworth, Fort Worth, clinical pathology; Willard R. Cooke, Galveston, obstetrics and gynecology, and Michael E. DeBakey, Houston, surgery, will participate in the Surgery, Gynecology and Obstetrics Luncheon. Drs. Jehu M. Robison, Houston, ear, nose and throat, and Clarence S. Sykes, Galveston, eye, will participate in the Eye, Ear, Nose and Throat Luncheon. A color television program of medical and surgical clinics originating in St. Mary's Infirmary will be shown through the courtesy of Smith, Kline and French Laboratories of Philadelphia. The Woman's Auxiliary will have its headquarters at the Galvez Hotel. Several related state organizations will hold meetings.

WISCONSIN

Dean Sperry Will Speak at Convocation.—Dean Willard L. Sperry, dean of the Memorial Church of Harvard University, Boston, will speak on "The Doctor, the Patient and Society" at the convocation of the University of Wisconsin Medical School April 23 in the Auditorium of the Service Memorial Institute in Madison.

University Appointment.—Dr. Milton Davis Jr., of Louisville, Ky., has been appointed associate professor of anesthesia in the University of Wisconsin Medical School, Madison. In 1945 Dr. Davis accepted an appointment at the University of Illinois as assistant professor of anesthesia, was made associate professor in 1946, and remained at Illinois until August 1949, when he went to Louisville.

GENERAL

Genito-Urinary Surgeons.—The American Association of Genito-Urinary Surgeons will hold its annual meeting May 16-18 at the Skytop Lodge in Skytop, Pa. Included in the program is a symposium Thursday afternoon on nephrolithiasis. The speakers will be Drs. Charles C. Higgins, Cleveland; Grayson L. Carroll, St. Louis; William J. Engel, Cleveland; Howard I. Suby, Boston, and James T. Priestley, Rochester, Minn. A symposium on congenital anomalies of the genito-urinary system makes up the larger part of the Friday morning program, with 11 physicians participating.

Surgeons' Sectional Meeting in Detroit.—The last of a series of seven sectional meetings of the American College of Surgeons will be held in Detroit May 9-11, with headquarters at the Book-Cadillac Hotel. Attendance will be largely from Michigan, Ohio, Manitoba, Ontario, Quebec and Saskatchewan, although there is no geographic restriction. Heading the committee on local arrangements for the Detroit meeting is Dr. Eugene A. Osius. Hospital conferences will be held on Thursday and Friday, May 10-11, concurrently with the medical sessions. On the first day an all day clinic program is scheduled at the University of Michigan Hospital in Ann Arbor.

Cleft Palate Rehabilitation Meeting.—The American Association for Cleft Palate Rehabilitation will convene in annual session April 27-28 at the Bellevue-Stratford Hotel in Philadelphia, under the presidency of Dr. John F. Harkins, Wesleyville, Pa. Scientific sessions will be held at the Temple University Dental School auditorium. A series of table clinics and exhibits will be set up. At the association dinner Thursday at 7: 30 p. m. at the University Club Mr. Eugene J. Taylor of the New York University Bellevue-Medical Center and a member of the *New York Times* staff, will speak on "Medicine, Mobilization and Manpower."

Orthoptic Technician Examination.—The annual examination of orthoptic technicians by the American Orthoptic Council will be conducted in September and October. The written examination will take place on September 6 in certain cities. The oral and practical examinations will be on October 6 in Chicago preceding the meeting of the American Academy of Ophthalmology and Otolaryngology. Application for examination will be received by the secretary of the American Orthoptic Council, Dr. Frank D. Costenbader, 1605 22nd Street, N.W., Washington 8, D. C., and must be accompanied by the examination fee of $30. Applications will not be accepted after July 1.

Meeting of Otologists.—The annual meeting of the American Otological Society, Inc., will be held May 11-12 at the Hotel Claridge, Atlantic City, under the presidency of Dr. Kenneth M. Day, Pittsburgh. Dr. Luzius Ruedi, professor of otolaryngology, University of Zürich, Switzerland, will speak at the opening session on "Experimental Findings on the Functions of the Inner Ear." Friday afternoon there will be a symposium on audiology with Richard S. Silverman, Ph.D., St. Louis, serving as moderator and the participants being Dr. Gordon D. Hoople, Syracuse, N. Y., Scott Reger, Ph.D., Ira J. Hirsh, Ph.D., Clarence O'Connor, Ph.D., and Lee Doerfler, Ph.D. Dr. Gilbert Roy Owen, Los Angeles, will address the group by invitation Saturday afternoon.

Mississippi Valley Medical Society Essay Contest.—The Mississippi Valley Medical Society will offer a cash prize of $100, a gold medal and a certificate of award for the best unpublished essay on any subject of general interest to the general practitioner of medicine. Contestants must be members of the American Medical Association, residents and citizens of the United States. The winner will be invited to present his contribution before the annual meeting of the society in Peoria, Ill., September 19-21. All contributions should be typewritten in English, submitted in five copies, not exceed 5,000 words and must be received not later than May 1. Details may be secured from Dr. Harold Swanberg, Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Ill.

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Certification of Causes of Death.—This film strip, with sound, issued by the Public Health Service, illustrates new procedures to be followed by physicians and others responsible for certifying causes of death. The film was developed by the National Office of Vital Statistics in cooperation with state health departments for showing before medical societies, hospitals, medical students and public health workers. It is designed to assist the physician to certify causes of death in a manner that will indicate clearly the particular cause to be used in compiling mortality data. The film and accompanying record are available for loan from the registrar of vital statistics for each state, U. S. territory and possession and from the independent registration cities of New York, Baltimore and New Orleans. The film and record may be purchased for $5.50 from the United World Films, Inc., 1445 Park Avenue, New York. There is a 10 per cent discount to health departments and nonprofit institutions.

Vacancies for Psychiatrists.—To assist the states in filling position vacancies, the U. S. Public Health Service has compiled the following list of vacancies: *Florida:* director, division of mental hygiene, Jacksonville. Parttime staff psychiatrists, Tallahassee and Daytona Beach. Write Dr. Wilson T. Sowder, State Health Officer, State Board of Health, Jacksonville. *Kansas:* Vacancies for psychiatrists as superintendents of two mental hospitals. Salary $7,500 plus full maintenance. Kansas also has vacancies for psychiatric clinical directors at a salary of $7,500 without maintenance; and staff psychiatrists with beginning salaries of $5,500 and up. Write Mr. Arthur A. Martin, Supervision of Institutional Management, State Department of Social Welfare, 801 Harrison Street, Topeka. *Tennessee:* Fulltime director, division of mental hygiene. Applications limited to candidates willing to come to Tennessee for a personal interview at their own expense. Write Dr. R. H. Hutcheson, Commissioner of Public Health, Department of Public Health, Nashville.

Pathologists and Bacteriologists Meeting.—The American Association of Pathologists and Bacteriologists will meet April 26-28 in the auditorium of the Academy of Medicine, Cleveland, under the presidency of Dr. Tracy B. Mallory, Boston. Single authors of papers to be presented by invitation include:

James L. Orbison, Cleveland, Morphology of the Vascular Lesions in "Thrombotic Thrombocytopenic Purpura" with Demonstration of Aneurysms.
Raymond J. Leffler, Bethesda, Md., The Spleen and Hypersplenism.
Frank A. Hartman, Columbus, Ohio, Secretion of Gluconeogenic and Lipid Hormones.
Gert L. Laqueur, Bethesda, Md., Pituitary Changes in Diseases of the Adrenal Cortex.
Thomas F. Dougherty, Ph.D., Salt Lake City, Observations on the Effect of Secretions of the Adrenal Cortex on Inflammation.
Norman Zamcheck, Boston, Adrenal Morphology in Systemic Disease.
George W. Thorn, Boston, Mechanism of Action of ACTH and Cortisone.
Georges M. C. Masson, Cleveland, Role of Adrenal in Experimental Hypertension.
Abraham White, New York, Influence of the Adrenal Cortex on the Metabolism of Normal and Malignant Lymphoid Tissue.

The annual dinner will be held at the Wade Park Manor Friday evening. The International Association of Medical Museums, American and Canadian section, will hold its meeting April 25 preceding that of the pathologists and bacteriologists.

Epidemiological Reports.—*United States:* The Arizona Department of Health reports that 21 cases of diphtheria have occurred in three communities within a 20 mile radius in the southeastern part of Yuma County near the Mexican border. Cases were diagnosed bacteriologically and clinically. South Dakota reports eight cases of diphtheria in a state school for the feeble minded during the week ended March 30. Dr. Allen W. Freeman, Maryland Department of Health, reports a marked increase in the number of reported cases of infectious hepatitis from January 1 to March 31. In January 10 cases were reported and in February 15, as compared with a total of 38 cases during all of 1950. *Other Areas:* The incidence of typhoid fever is reported to be high in Santiago, Chile, where 489 cases were reported in the two week period ended March 9. In Medellin, Colombia, 40 cases and one death were reported in the four weeks ended February 28. There were 14 cases of typhoid in San Luis Patosi, Mexico, during the week ended March 24. In Sicily 361 cases of typhoid fever were reported during January. In French West Africa 432 cases of cerebrospinal meningitis (presumably meningococcal) and 130 deaths were reported for the week ended February 10. The number of cases of measles reported in England and Wales was approximately 220,800 from January 1 to March 10, as compared with 37,000 in the same period last year. The last previous year of high incidence was 1949. The impact of the influenza epidemic in England and Wales may be judged in the cumulative totals of deaths for the first 10 weeks of 1951. In the 126 Great Towns deaths from all causes totaled 86,703, as compared with 60,218 last year; deaths from pneumonia totaled 11,640 in 1951, as compared with 5,645 in 1950, and deaths from influenza totaled 6,936 and 664 respectively for the two years.

FOREIGN

Japan Applies for Admission to WHO.—Japan applied in February for full membership in the World Health Organization. The question of her admission has been placed on the agenda of the Fourth World Health Assembly, which is due to open May 7 in Geneva. According to the WHO constitution, states not belonging to the United Nations can be admitted as WHO members by simple majority vote of the Health Assembly. To date 74 countries have joined the World Health Organization and one country, Southern Rhodesia, has been admitted as an associate member.

Institute of Biology of Great Britain.—A symposium on "Freeze-drying" will be held in London June 29-30. Provisional arrangements envisage four sessions in which it is hoped to cover the major aspects of the whole field of application of the technique:

Physical principles; freeze and drying of proteins and protein-containing materials such as plasma and food-stuffs, chairman, Dr. R. I. N. Greaves, Cambridge.
The Drying of Bacteria and Antibiotics, chairman, Sir Alexander Fleming, F. R. S. London.
Drying of Viruses and Vaccines, chairman, Dr. C. H. Andrewes, F. R. S., London.
The Drying of Tissues and Tissue Sections, chairman, Professor J. F. Danielli.

All investigators in these fields and others who are interested are invited. Applications should be made to Dr. R. J. C. Harris, Chester Beatty Research Institute, Fulham Road, London, S.W.3.

MEETINGS

AERO MEDICAL ASSOCIATION, Denver, Colo., May 14-16. Dr. Thomas H. Sutherland, 214 S. State St., Marion, Ohio, Secretary.

ALABAMA, MEDICAL ASSOCIATION OF THE STATE OF, Mobile, April 19-21. Dr. Douglas L. Cannon, 519 Dexter Ave., Montgomery, Secretary.

ALASKA TERRITORIAL MEDICAL ASSOCIATION, Ketchikan, May 31-June 2. Dr. William P. Blanton, Box 2569, Juneau, Secretary.

AMERICAN ASSOCIATION FOR CLEFT PALATE REHABILITATION, Bellevue-Stratford Hotel, Philadelphia, April 27-28. Dr. Robert L. Harding, 813 N. Second Street, Harrisburg, Pa., Chairman.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Atlantic City, April 16-18. Dr. Brian Blades, 901 Twenty-Third St. N.W., Washington 7, D. C., Secretary.

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS, Skytop Lodge, Skytop, Pa., May 16-18. Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago 3, Secretary.

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Atlantic City, N. J., April 23-27. Dr. Edward C. Holmblad, 28 E. Jackson Blvd., Chicago 4, Managing Director.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, Cleveland, April 26-28. Dr. Alan R. Moritz, 2085 Adelbert Road, Cleveland 6, Secretary.

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY, Hotel New Yorker, New York, May 21-26. Dr. Neil A. Dayton, P. O. Box 96, Willimantic, Conn., Secretary.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, May 7-8. Dr. Edwin N. Broyles, 1100 N. Charles St., Baltimore 1, Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Atlantic City, June 7-10. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Atlantic City, June 10. Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN DERMATOLOGICAL ASSOCIATION, The Homestead, Hot Springs, Va., May 23-26. Dr. Louis A. Brunsting, 102 Second Ave., S. W., Rochester, Minn., Secretary.

AMERICAN DIABETES ASSOCIATION, Chalfonte-Haddon Hall, Atlantic City, June 9-10. Dr. John A. Reed, 11 W. 42d St., New York 18, Secretary.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION, Atlantic City, June 8-9. Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco 2, Secretary.

AMERICAN GERIATRICS SOCIETY, Hotel Brighton, Atlantic City, June 7-9. Dr. Malford W. Thewlis, 25 Mechanic St., Wakefield, R. I., Secretary.

AMERICAN GOITER ASSOCIATION, Deshler-Wallick Hotel, Columbus, Ohio, May 24-26. Dr. George C. Shivers, 100 E. St. Vrain St., Colorado Springs, Colo., Secretary.

AMERICAN GYNECOLOGICAL SOCIETY, Waldorf-Astoria Hotel, New York, May 7-9. Dr. Norman F. Miller, 1313 E. Ann St., Ann Arbor, Mich., Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, May 9-10. Dr. Louis H. Clerf, 1530 Locust St., Philadelphia 2, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Hotel Claridge, Atlantic City, May 6-8. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

AMERICAN OPHTHALMOLOGICAL SOCIETY, The Greenbrier, White Sulphur Springs, W. Va., June 7-9. Dr. Maynard C. Wheeler, 30 W. 59th St., New York 19, Secretary.

AMERICAN OTOLOGICAL SOCIETY, Hotel Claridge, Atlantic City, May 11-12. Dr. John Lindsay, 950 E. 59th St., Chicago 37, Secretary.

AMERICAN PEDIATRIC SOCIETY, Atlantic City, May 2-5. Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12, Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY, Cleveland, April 30-May 4. Dr. R. W. Gerard, Dept. of Physiology, University of Chicago, Chicago, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Atlantic City, June 7-10. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

AMERICAN PSYCHIATRIC ASSOCIATION, Cincinnati, May 7-11. Dr. R. Finley Gayle Jr., 501 E. Franklin St., Richmond 19, Va., Secretary.

AMERICAN PSYCHOANALYTIC ASSOCIATION, Netherland Plaza Hotel, Cincinnati, Ohio, May 4-6. Dr. LeRoy M. A. Maeder, 1910 Rittenhouse Square, Philadelphia 3, Secretary.

AMERICAN PSYCHOSOMATIC SOCIETY, Chalfonte-Haddon Hall, Atlantic City, N. J., April 28. Dr. Sydney G. Margolin, 714 Madison Ave., New York City 21, Secretary.

AMERICAN RADIUM SOCIETY, Atlantic City, June 6-9. Dr. John Wirth, U. S. Marine Hospital, Baltimore, Secretary.

AMERICAN RHEUMATISM ASSOCIATION, Hotel Dennis, Atlantic City, June 8-9. Dr. Charles Ragan, 620 W. 168th St., New York 32, Secretary.

AMERICAN SOCIETY FOR CLINICAL INVESTIGATION, Steel Pier, Atlantic City, April 30. Dr. Paul B. Beeson, Grady Hospital, Atlanta 3, Ga., Secretary.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY, Cleveland, April 30-May 4. Dr. Sidney C. Madden, Brookhaven National Laboratory, Upton, L. I., New York, Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, Cleveland, April 28-May 4. Dr. Harvey B. Haag, Medical College of Virginia, Richmond 19, Va., Secretary.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY, Ritz-Carlton Hotel, Atlantic City, June 9-10. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, Cleveland, April 28-May 4. Dr. Elmer H. Stotz, University of Rochester School of Medicine, Rochester 7, N. Y., Secretary.

AMERICAN THERAPEUTIC SOCIETY, Atlantic City, June 8-10. Dr. Oscar B. Hunter, 915 Nineteenth St. N.W., Washington 6, D. C., Secretary.

AMERICAN UROLOGICAL ASSOCIATION, Palmer House, Chicago, May 21-24. Dr. Charles H. deT. Shivers, Boardwalk National Arcade Bldg., Atlantic City, N. J., Secretary.

ARIZONA MEDICAL ASSOCIATION, Tucson, April 29-May 2. Dr. Frank J. Milloy, 234 North Central Ave., Phoenix, Secretary.

ARKANSAS MEDICAL SOCIETY, Little Rock, April 23-25. Dr. William R. Brooksher, 100 N. 16th St., Fort Smith, Secretary.

ASSOCIATION FOR THE STUDY OF INTERNAL SECRETIONS, Chalfonte-Haddon Hall, Atlantic City, June 7-9. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS, Chalfonte-Haddon Hall, Atlantic City, May 1-2. Dr. Henry M. Thomas Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

CALIFORNIA MEDICAL ASSOCIATION, Hotel Biltmore, Los Angeles, May 13-16. Dr. Albert C. Daniels, 450 Sutter St., San Francisco 8, Secretary.

CATHOLIC HOSPITAL ASSOCIATION OF THE UNITED STATES AND CANADA, Convention Hall, Philadelphia, June 2-5. Mr. M. R. Kneifl, 1402 S. Grand Blvd., St. Louis 4, Executive Secretary.

CONFERENCE OF PRESIDENTS AND OTHER OFFICERS OF STATE MEDICAL ASSOCIATIONS, Hotel Traymore, Atlantic City, June 10. Mr. John E. Farrel, 106 Francis St., Providence 3, R. I., Secretary.

CONNECTICUT STATE MEDICAL SOCIETY, Stratford, May 1-3. Dr. Creighton Barker, 160 St. Ronan St., New Haven, Secretary.

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, Cleveland, April 28-May 4. Dr. Milton O. Lee, 2101 Constitution Ave., Washington 25, D. C., Secretary.

FLORIDA MEDICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, April 22-25. Dr. Robert B. McIver, P. O. Box 1018, Jacksonville, Secretary.

GEORGIA, MEDICAL ASSOCIATION OF, Bon Air Hotel, Augusta, April 17-20. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.

HAWAII TERRITORIAL MEDICAL ASSOCIATION, Honolulu, May 3-6. Dr. I. L. Tilden, 510 S. Beretania St., Honolulu 13, Secretary.

ILLINOIS STATE MEDICAL SOCIETY, Hotel Sherman, Chicago, May 22-24. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.

IOWA STATE MEDICAL SOCIETY, Sioux City, April 23-26. Dr. Allan B. Phillips, 406 Sixth Ave., Des Moines 9, Secretary.

KANSAS MEDICAL SOCIETY, Topeka, May 14-17. Dr. D. D. Vermillion, 512 New England Bldg., Topeka, Secretary.

LOUISIANA STATE MEDICAL SOCIETY, New Orleans, May 7-9. Dr. C. Grenes Cole, 1430 Tulane Ave., New Orleans 12, Secretary.

MARYLAND, MEDICAL AND CHIRURGICAL FACULTY OF THE STATE OF, Baltimore, April 24-25. Dr. George H. Yeager, 1211 Cathedral St., Baltimore 1, Secretary.

MASSACHUSETTS MEDICAL SOCIETY, Hotel Statler, Boston, May 22-24. Dr. H. Quimby Gallupe, 8 Fenway, Boston 15. Secretary.

MINNESOTA STATE MEDICAL ASSOCIATION, Municipal Auditorium, Rochester, April 30-May 2. Dr. B. B. Souster, 496 Lowry Medical Arts Bldg., St. Paul 2, Secretary.

MISSISSIPPI STATE MEDICAL ASSOCIATION, Biloxi, May 15-17. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.

MISSOURI STATE MEDICAL ASSOCIATION, Municipal Auditorium, Kansas City, April 22-25. Dr. H. E. Petersen, 634 N. Grand Blvd., St. Louis 3, Secretary.

NATIONAL TUBERCULOSIS ASSOCIATION, Cincinnati, Ohio, May 14-18. Dr. James E. Perkins, 1790 Broadway, New York 19, Managing Director.

NEBRASKA STATE MEDICAL ASSOCIATION, Paxton Hotel, Omaha, April 30-May 3. Dr. R. B. Adams, 1315 Sharp Bldg., Lincoln 8, Secretary.

NEW JERSEY, MEDICAL SOCIETY OF, Haddon Hall, Atlantic City, May 14-17. Dr. Marcus H. Greifinger, 315 W. State St., Trenton 8, Secretary.

NEW MEXICO MEDICAL SOCIETY, Santa Fe, May 3-5. Dr. L. G. Rice Jr., 221 West Central Ave., Albuquerque, Secretary.

NEW YORK, MEDICAL SOCIETY OF THE STATE OF, Hotel Statler, Buffalo, April 30-May 4. Dr. Walter P. Anderton, 292 Madison Ave., New York 17, Secretary.

NORTH CAROLINA, MEDICAL SOCIETY OF THE STATE OF, The Carolina, Pinehurst, May 7-9. Dr. Millard D. Hill, 203 Capitol Club Bldg., Raleigh, Secretary.

NORTH DAKOTA STATE MEDICAL ASSOCIATION, Bismarck, May 19-22. Dr. O. A. Sedlak, 702 First Ave. S., Fargo, Secretary.

NORTH PACIFIC SOCIETY OF NEUROLOGY AND PSYCHIATRY, Victoria, B. C., Canada, April 20-21. Dr. Gerhard B. Haugen, Mayer Bldg., Portland, Ore., Secretary.

OHIO STATE MEDICAL ASSOCIATION, Netherland Plaza Hotel, Cincinnati, April 24-26. Mr. Charles S. Nelson, 79 E. State St., Columbus 15, Executive Secretary.

OKLAHOMA STATE MEDICAL ASSOCIATION, Mayo Hotel, Tulsa, May 21-23. Mr. R. H. Graham, 1227 Classen St., Oklahoma City, Executive Secretary.

POST GRADUATE INSTITUTE OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY, Bellevue-Stratford Hotel, Philadelphia, April 24-27. Dr. Thomas M. Durant, 301 S. 21st St., Philadelphia, Director.

RHODE ISLAND MEDICAL SOCIETY, Providence, May 9-10. Dr. Morgan Cutts, 106 Francis St., Providence 3, Secretary.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS:
Detroit, Mich., Book-Cadillac Hotel, May 9-11. Dr. Eugene A. Osius, 1553 Woodward Ave., Detroit 26, Chairman.

SOCIETY FOR INVESTIGATIVE DERMATOLOGY, Ritz-Carlton Hotel, Atlantic City, June 7-8. Dr. Herman Beerman, 255 S. 17th St., Philadelphia, Secretary.

SOCIETY FOR PEDIATRIC RESEARCH, Hotel Traymore, Atlantic City, May 2-3. Dr. Robert Ward, Bellevue Medical Center, New York 16, Secretary.

SOCIETY OF AMERICAN BACTERIOLOGISTS, Chicago, May 28-June 1. Dr. John E. Blair, 1919 Madison Ave., New York 35, Secretary.

SOUTH CAROLINA MEDICAL ASSOCIATION, Ocean Forest Hotel, Myrtle Beach, May 15-17. Dr. N. B. Heyward, 105 W. Cheves St., Florence, Secretary.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION, Aberdeen, June 2-6. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

SOUTHERN SOCIETY OF ANESTHESIOLOGISTS, Brown Hotel, Louisville, Ky., April 20-21. Dr. John Adriani, Charity Hospital, New Orleans 12, Secretary.

TEXAS, STATE MEDICAL ASSOCIATION OF, Galveston, April 28-May 2. Mr. Tod Bates, 700 Guadalupe St., Austin, Executive Secretary.

INTERNATIONAL

EUROPEAN CONGRESS ON RHEUMATISM, Barcelona, Spain, Sept. 24-27. Dr. Gunnar Edström, Lund, Sweden, Secretary.

INTERNATIONAL ACADEMY OF PROCTOLOGY, Atlantic City, N. J., U. S. A., June 14-15. Dr. Alfred J. Cantor, 43-45 Kissena Blvd., Flushing, New York, Secretary.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, London, England, Sept. 3-7. Mr. R. W. Cope, University College Hospital, London W.C.1, England.

INTERNATIONAL ASSOCIATION OF ALLERGISTS, Zurich, Switzerland, Sept. 23-29. Prof. A. S. Grumbach, Hygiene Institut der Universitaet Zurich, Gloriastr. 32, Zurich, Switzerland.

INTERNATIONAL CONGRESS OF ANESTHESIOLOGY, Nursing School of the Salpiettre, 47 Boul de l'Hospital, Paris, France, Sept. 20-22. 12 rue de Seine, Paris 6e, France, Secretariat.

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INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, London, England, July 16-20. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W.9, England, Secretary.

INTERNATIONAL CONGRESS OF GYNECOLOGY, Maison de la Chimie, Centre Marcellin, Paris, France, June 23-29. Dr. Maurice Fabre, 1, rue Jules-Lefebvre, Paris IX, General Secretary.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, Mexico City, Mexico, Dec. 11-19.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Paris, France, June 17-23. Physician General Dutrey, 8, bis, rue de Recollets, Paris X, Secretary General.

INTERNATIONAL CONGRESS OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Stockholm, Sweden, May 21-25. Dr. Anders Karlen, Karolinska Instituts Ortopediska Klinik, Stockholm, Secretary.

INTERNATIONAL EXHIBITION OF MEDICAL ARTS, Turin, Italy, May 30-June 12. Prof. S. Teneff, Palazzo della Esposizioni al Valentino, Turino, Italy.

INTERNATIONAL GERONTOLOGICAL CONGRESS, Hotel Jefferson, St. Louis, Mo., U. S. A., Sept. 9-14. Dr. John E. Kirk, 5600 Arsenal Street, St. Louis 9, Mo., Chairman, Program Committee.

INTERNATIONAL HOSPITAL CONGRESS, Brussels, Belgium, July 15-21. Capt. J. E. Stone, 10 Old Jewry, London E.C., England, Secretary.

INTERNATIONAL POLIOMYELITIS CONGRESS, Copenhagen, Denmark, Sept. 3-7. Prof. Dr. Niels Bohr, Statens Seruminstitut, 80 Amager Blvd., Copenhagen S., Denmark, President.

INTERNATIONAL SOCIETY OF ANGIOLOGY, Claridge Hotel, Atlantic City, N. J., U. S. A., June 9. Dr. Henry Haimovici, 105 E. 90th St., New York 28, Secretary.

INTERNATIONAL SOCIETY OF SURGERY, Paris, France, Sept. 24-29. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, Secretary General.

INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Fifth World Congress, Stockholm, Sweden, Sept. 9-14. Mr. Donald V. Wilson, 54 E. 64th St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS ON MEDICAL EDUCATION, Lima, Peru, May 14-18. Dr. Carlos F. Krumdieck, Washington 914, Lima, Secretary General.

PAN PACIFIC SURGICAL ASSOCIATION CONGRESS, Honolulu, Hawaii, Nov. 10-21. Dr. Forrest J. Pinkerton, Suite 7, Young Bldg., Honolulu, Hawaii, President.

WORLD CONFEDERATION FOR PHYSICIAL THERAPY, Copenhagen, Denmark, Sept. 7-8.

WORLD MEDICAL ASSOCIATION, Stockholm, Sweden, Sept. 15-21. Dr. Louis H. Bauer, 2 E. 103d St., New York 29, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 26-28. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARIZONA:* *Examination.* Phoenix, April 17-19. *Reciprocity.* Phoenix, April 21. Sec., Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.

ARKANSAS: * *Regular.* Little Rock, June 14-15. Sec., Dr. Joe Verser, Harrisburg. *Homeopathic.* Fort Smith, June 7-8. Sec., Dr. Carl S. Bungart, 105 N. 14th St., Fort Smith. *Eclectic.* Little Rock, June 7-8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* San Francisco, June 25-28 and Aug. 20-23. *Oral.* San Francisco, June 23 and Los Angeles, August 18. *Oral and Clinical Examination for Foreign Medical School Graduates.* San Francisco, June 24 and Los Angeles, August 19. Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento 14.

CONNECTICUT:* *Regular. Examination.* Hartford, July 10-11. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., Hartford. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: Dover, July 10-12. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Reciprocity.* Washington, June 1k. Sec., Dr. Daniel L. Seckinger, 4130 East Municipal Bldg., Washington.

FLORIDA:* *Examination.* Jacksonville, June 24-26. Sec., Dr. Homer L. Pearson, 701 DuPont Bldg., Miami.

GEORGIA: Atlanta, June. Augusta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Ex. Sec., Dr. John Y. Battenfield, Agana.

HAWAII: *Examination.* Honolulu, July 9-12. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, July 9-11. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

INDIANA: Indianapolis, June 20-22. Exec. Sec., Miss Ruth V. Kirk, 1138 K. of P. Bldg., Indianapolis 4.

IOWA: * *Written.* Iowa City, June 11-13. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Kansas City, June 6-7. Sec., Dr. O. W. Davidson, 864 New Brotherhood Building, Kansas City.

KENTUCKY: Louisville, June 6-8. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville.

LOUISIANA: New Orleans, June. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12.

MAINE: Augusta, July 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Baltimore, June 19-22. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic.* Baltimore, June 19-20. *Examination.* Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, July 10-13. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston 33.

MINNESOTA:* Minneapolis, April 17-19. Sec., Dr. Julian F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson 113.

MISSOURI: St. Louis, May 31-June 2, June 7-9. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

NEBRASKA: * June 1951. Director, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln.

NEW JERSEY: *Examination.* Trenton, June 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 26-29. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Endorsement.* Pinehurst, May 7. *Examination,* Raleigh, June 18-21. Sec., Dr. Joseph J. Combs, 419 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 4-7. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, June 19-21. *Endorsement.* Columbus, April 3. Sec., Dr. H. M. Platter, 21 W. Broad Street, Columbus.

OKLAHOMA: * *Examination.* Oklahoma City, June 6-7. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Reciprocity.* April 27-28. *Examination.* Portland, June 21-23. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July. Acting Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: *Examination.* Columbia, June 25-27. *Reciprocity.* Columbia, April 2 and May 15. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: Rapid City, July 17-18. Sec., Dr. Clarence E. Sherwood, 109 Center St., West, Madison.

TEXAS:* *Examination.* Austin, June 14-16. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: Salt Lake City, July 11-13. Asst. Dir., Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VIRGIN ISLANDS: St. Thomas, June 12. Sec., Dr. Earle M. Rice, St. Thomas.

WASHINGTON:* Seattle, July 16-18. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: Charleston, July 9-11. Sec., Dr. N. H. Dyer, Capitol Bldg., Charleston 5.

WISCONSIN:* Milwaukee, July 10-12. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: *Examination.* Cheyenne, June 4. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: *Examination.* Little Rock, May 8-9. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, June 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. 3.

DISTRICT OF COLUMBIA: *Examination.* April 23-24. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, June 2. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination.* Ann Arbor and Detroit, May 11-12. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

NEBRASKA: *Examination.* Omaha, May 8-9. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln 9.

OREGON: *Examination.* Portland, June 2. Sec., Dr. Charles D. Byrne, State Board of Higher Education, University of Oregon, Eugene.

RHODE ISLAND: *Examination.* Providence, May 9. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: *Examination.* Vermillion, June 15-16. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, July 5-6. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

TEXAS: *Examination.* Austin, April 20-21. If sufficient applications received from vicinity of Dallas or Houston, the board will upon request give examination in one of these cities at the same time. Sec., Bro. Raphael Wilson, 306 Nalle Bldg., Austin.

WASHINGTON: *Examination.* Seattle, July 11-12. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

* Basic Science Certificate required.

DEATHS

Coffen, Thomas Homer ✙ Portland, Ore.; born in Minneapolis July 16, 1877; Johns Hopkins University School of Medicine, Baltimore, 1906; professor emeritus of medicine at the University of Oregon Medical School, where he joined the faculty as instructor in medicine and later became clinical professor; at one time on the faculty of the New York Post-Graduate and Cornell University medical schools and on the staff of the Bellevue Hospital, all in New York; specialist certified by the American Board of Internal Medicine; member of the North Pacific Society of Internal Medicine; fellow and formerly vice president of the American College of Physicians, of which he had been a governor and a regent; past president of the Multnomah County Medical Society and formerly secretary of the Oregon State Medical Society; served during World War I; on the staffs of Good Samaritan and St. Vincent's hospitals; cardiovascular consultant to the Veterans Administration Hospital; consultant, Multnomah Hospital; died January 9, aged 73, of carcinoma of the stomach.

Hart, Theodore Stuart ✙ New York; born in Groving, Ill., Feb. 25, 1869; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; formerly on the faculty of his alma mater; specialist certified by the American Board of Internal Medicine; member of the Association of American Physicians, American Society for Clinical Investigation, New York Academy of Medicine and Harvey Society; formerly vice president and president of the New York Heart Association; chairman of the executive committee of the American Heart Association and director of the New York Tuberculosis and Health Association from 1924 to 1931; cardiovascular consultant for the U. S. Army in 1917; served on the staffs of Seton, Presbyterian, Manhattan Eye, Ear and Throat hospitals and the Neurological Institute; author of "Taking Care of Your Heart" and "Abnormalities of Myocardial Function"; died January 1, aged 81, of coronary arteriosclerosis.

Shanno, Ralph Leopold ✙ Forty Fort, Pa.; born in Freeland, Pa., Feb. 20, 1899; Jefferson Medical College of Philadelphia, 1927; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served during World Wars I and II; formerly vice president of the Pennsylvania Heart Association; assistant instructor in medicine at the University of Pennsylvania School of Medicine in Philadelphia; chief of medical service and cardiologist, Mercy Hospital, Wilkes-Barre; chief of medical service and associate cardiologist, Nesbitt Memorial Hospital, Kingston; electrocardiographer, Retreat State Hospital in Retreat; consultant in cardiology, Pittston (Pa.) Hospital and Wyoming Valley Homeopathic Hospital, Wilkes-Barre; in 1946 at the San Francisco session of the American Medical Association received a Certificate of Merit for original investigation on rutin; died in Temple University Hospital in Philadelphia, February 14, aged 51, of respiratory failure.

Smith, Maurice Isadore, Bethesda, Md.; born in Russia, Nov. 17, 1887; Cornell University Medical College, New York, 1913; instructor in pharmacology at the University of Michigan Medical School, Ann Arbor, from 1914 to 1917; professor and chairman of the department of pharmacology at the University of Nebraska College of Medicine in Omaha from 1917 to 1920; for many years chief pharmacologist for the National Institutes of Health, U. S. Public Health Service; served as a member of the District of Columbia Examining Board in the Basic Sciences; member of the American Trudeau Society, American Society for Pharmacology and Experimental Therapeutics, American Association for the Advancement of Science and the Washington Academy of Science; died in the George Washington University Hospital, Washington, D. C., January 26, aged 63, of myocardial infarction and coronary artery disease.

✙ Indicates Fellow of the American Medical Association.

Davis, Ralph Ferrien, Portland, Ore.; born in 1881; University of Oregon Medical School, Portland, 1909; clinical professor of otology, rhinology and laryngology at his alma mater; certified by the American Board of Ophthalmology and the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Oto-Laryngology, American Medical Association, American Laryngological, Rhinological and Otological Society and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; served on the staffs of the Portland Eye, Ear, Nose and Throat and Good Samaritan hospitals, and Doernbecher Memorial Hospital for Children; died February 8, aged 70.

Hayward, Alexander Bayly ✙ Medical Inspector, Commander, U. S. Navy, retired, Berkeley, Calif.; born on May 11, 1882, in Dorchester County, Md.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; on Sept. 26, 1907, commissioned lieutenant (jg) in the medical corps of the Navy; served in many naval hospitals throughout the United States and on ships of the active fleet; placed on the retired list of the Navy on July 1, 1937; during World War II was recalled to active duty and served in the 12th Naval District until he was released to inactive duty on July 1, 1945; died in the U. S. Naval Hospital, Oakland, February 25, aged 68, of embolism and arteriosclerotic heart disease.

Miller, John ✙ Greenwich, Conn.; born in Cohocton, N. Y., Nov. 5, 1891; Cornell University Medical College, New York, 1915; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological, Rhinological and Otological Society and the American Broncho-Esophagological Association; fellow of the American College of Surgeons; consulting bronchoscopist, New York Eye and Ear Infirmary, New York; consultant in bronchoscopy, United Hospital, Port Chester, N. Y., and the Stamford and St. Joseph's hospitals in Stamford; otolaryngologist at Greenwich Hospital; died January 14, aged 59.

Hart, Charles Delucena, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1897; honorary president of the Philadelphia Council, Boy Scouts of America; served as chief of the outpatient department of Pennsylvania Hospital; had been secretary of the Pennsylvania Parole Board, vice chairman of the Philadelphia Orchestra endowment campaign and chairman of the Philadelphia Citizens Award Committee; served as a trustee of Drexel Institute of Technology and Philadelphia Art Museum and as member of the board of the Pennsylvania School for the Deaf; received an honorary LL.D. degree from Temple University; died February 14, aged 79.

Putnam, Helen C. ✙ Providence, R. I.; born in Stockton, Minn., Sept. 14, 1857; Woman's Medical College of Pennsylvania, Philadelphia, 1889; fellow and past president of the American Academy of Medicine; honorary fellow of the American Association for the Advancement of Science; fellow of the American Public Health Association; a delegate to the International Congress on Tuberculosis and the International Congress on School Hygiene in London; in 1944 the Helen Putnam Fellowship for advanced research was established at Radcliffe College in Cambridge, Mass.; died February 3, aged 93, of intestinal obstruction and arteriosclerotic heart disease.

Smith, William Wallis ✙ Springfield, Mo.; born in Marshfield, Mo., in 1886; Rush Medical College, Chicago, 1912; fellow of the International College of Surgeons and the American College of Surgeons; past president of the Missouri State Medical Association and Greene County Medical Society; served as councilor and vice chairman of the Eighth District Medical Society; affiliated with Springfield Baptist, St. John's and Burge hospitals; surgeon, Missouri Pacific Railroad and consulting surgeon, Frisco Railroad; for many years member of the board of trustees of Drury College; died in Miami, Fla., March 4, aged 64, of coronary occlusion.

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Abbott, Ethan Marsh, Morgan, Utah; Western Reserve University School of Medicine, Cleveland, 1920; member of the American Medical Association; on the staff of the Thomas D. Dee Memorial Hospital in Ogden, where he died January 7, aged 58, of cerebral hemorrhage and cardiovascular disease.

Airth, Henry Franklin, Live Oak, Fla.; Hospital College of Medicine, Louisville, Ky., 1889; formerly mayor of Live Oak; died in Suwannee County Hospital January 30, aged 85, of hypostatic pneumonia.

Anderson, Windom Edward, Newark, N. J.; University of Buffalo School of Medicine, 1924; died in the Hospital of St. Barnabas January 22, aged 49, of cerebral hemorrhage and general arteriosclerosis.

Baker, Samuel Ray ✠ Lexington, Ky.; University of Arkansas School of Medicine, Little Rock, 1929; member of the American Psychiatric Association; served during World War II; on the staff of the Veterans Administration Hospital; died January 18, aged 45, of an accidental gunshot wound received while cleaning his rifle.

Baldwin, Eleanor de Forest ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1931; certified by the National Board of Medical Examiners; member of the American Trudeau Society; assistant professor of medicine at her alma mater; affiliated with Bellevue Hospital and Presbyterian Hospital, where she died January 16, aged 46, following an operation on the cervical spine.

Banks, Alfred Edward, San Diego, Calif.; College of Physicians and Surgeons of San Francisco, 1904; member of the American Medical Association; served overseas during World War I; formerly health officer of San Diego; on the staff of Mercy Hospital; died January 16, aged 70, of chronic myocarditis.

Barron, William Harry ✠ Fredericktown, Mo.; Barnes Medical College, St. Louis, 1904; member of the Madison County Health Unit; at one time county health physician; in 1948 was chosen "Missouri's General Practitioner of the Year" and in 1949 was awarded a plaque at the meeting of the state medical association in Kansas City; affiliated with the Bonne Terre (Mo.) Hospital; accidentally drowned January 3, aged 75.

Bayley, Richard Hugh McDowell ✠ Lafayette, Ind.; University of Michigan Medical School, Ann Arbor, 1920; fellow of the American College of Physicians; member of the American Heart Association; affiliated with St. Elizabeth Hospital and Lafayette Home Hospital; died January 18, aged 59, of coronary thrombosis.

Beardsley, Harber C., East Cleveland, Ohio; Chicago Homeopathic Medical College, 1889; died January 17, aged 83.

Beery, Joseph Eugene, Columbus, Ohio; Miami Medical College, Cincinnati, 1886; served in the department of materia medica from 1892 to 1896 and department of therapeutics and physical diagnosis, 1897-1898, Ohio Medical University; on the staffs of Grant, White Cross and Mercy hospitals; died January 13, aged 89, of heart block.

Bernard, Joseph Henry, Truckee, Calif.; Cooper Medical College, San Francisco, 1899; died in Reno, Nevada, January 31, aged 76, of peritonitis, adenocarcinoma of the rectum and diabetes mellitus.

Bernstein, Samuel Louie ✠ Cleveland; University of Wooster Medical Department, Cleveland, 1895; also a graduate in pharmacy; served during World War I; affiliated with Mount Sinai and St. Luke's hospitals; died January 13, aged 78, of hypertension, arteriosclerosis and cerebral thrombosis.

Blair, William Edward ✠ Lebanon, Ohio; Miami Medical College, Cincinnati, 1908; for many years county health commissioner; died in Christ Hospital January 25, aged 68, of injuries received in an automobile accident.

Brown, Edna Whitcomb, Freeport, Texas; the Hahnemann Medical College and Hospital of Chicago, 1899; member of the American Medical Association; roentgenologist at Dow Hospital, where she died January 24, aged 77, of carcinoma of the breast.

Brown, Karl Trueblood, Muncie, Ind.; Barnes Medical College, St. Louis, 1899; member of the American Medical Association; served during World War I; died January 30, aged 76, of lobar pneumonia.

Brunner, Matthew ✠ Brooklyn; University and Bellevue Hospital Medical College, New York, 1919; member of the American Academy of Allergy and a fellow of the American College of Allergists; president of the New York Allergy Society; on the staff of Jewish Hospital, where he died January 17, aged 55, of leukemia.

Calahan, Luther John, Chico, Calif.; University of Vermont College of Medicine, Burlington, 1910; served with the American Expeditionary Forces during World War I; decorated by King Albert of Belgium with the Order of the Crown and also was cited for valor by General Pershing; affiliated with Enloe Hospital; died January 18, aged 64, of cerebral hemorrhage.

Cantrell, Cyrus Duncan ✠ Kansas City, Mo.; University of Texas School of Medicine, Galveston, 1902; affiliated with St. Joseph Hospital; died January 31, aged 77, of coronary sclerosis.

Commings, Comfort W., Atwater, Ohio; Cleveland Medical College, Homeopathic, 1895; died in Deland, Fla., January 22, aged 86, of cardiac thrombosis.

Dunkeson, Edward B., Lathrop, Mo.; Kansas City Medical College, 1893; member of the American Medical Association; died January 12, aged 82, of carcinoma of the prostate.

Elliott, Samuel Tilden, Brookneal, Va.; Medical College of the State of South Carolina, Charleston, 1901; served overseas during World War I; died in the Veterans Administration Hospital in Richmond January 2, aged 74, of obstructive biliary cirrhosis.

Etzenhouser, Merrill Winn, Independence, Mo.; University of Kansas School of Medicine, Kansas City, 1937; member of the American Medical Association; interned at the University of Kansas Hospitals in Kansas City, Kan., where he had been a resident in obstetrics and gynecology and pathology; served in the U. S. Navy during World War II and resigned his commission as a commander in 1947; on the staff of Independence Sanitarium and Hospital; found dead January 16, aged 38, of an accidental gunshot wound.

Fitch, James William ✠ Portsmouth, Ohio; Kentucky School of Medicine, Louisville, 1893; fellow of the American College of Surgeons; past president, secretary and treasurer of the Hempstead Academy of Medicine; for many years physician of the Home for Aged Women; honorary member of the staff of Mercy Hospital; on the staff of Portsmouth General Hospital, where he died January 17, aged 85, of myocarditis.

Flynn, Jeremiah Charles, Inkster, Mich.; University of Michigan Medical School, Ann Arbor, 1912; served during World War I; affiliated with Beyer Memorial Hospital in Ypsilanti, Mich., and Wayne (Mich.) General Hospital; died in the Veterans Administration Hospital, Dearborn, January 23, aged 61, of bronchopneumonia.

Fravel, Roy Clyde, Woodstock, Va.; University College of Medicine, Richmond, 1909; also a graduate in pharmacy; fellow of the American College of Surgeons; served in France during World War I; medical director and owner of Fravel Hospital; died in the University of Virginia Hospital, Charlottesville, January 13, aged 68, of pyelonephritis and uremia.

Fullerton, William Dixon, Cleveland; Johns Hopkins University School of Medicine, Baltimore, 1911; member of the American Medical Association and Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; specialist certified by the American Board of Obstetrics and Gynecology; senior clinical instructor in gynecology at Western Reserve University School of Medicine; affiliated with University Hospitals and Lakeside Hospital, where he died January 30, aged 65, of uremia.

Gipson, John Harrison, Des Arc, Ark. (licensed in Arkansas in 1903); died January 22, aged 72, of heart disease.

Gray, Cyrus Robert ✠ Newport, Ark.; Memphis (Tenn.) Hospital Medical College, 1908; medical director and owner of Dr. Gray's Hospital; died in Hickory Valley January 5, aged 67, of coronary occlusion.

Grebe, Jacob E., Portland, Ore.; Ensworth Medical College, St. Joseph, Mo., 1888; died January 16, aged 85.

Green, Lee Marcus, Eden, N. Y.; University of Buffalo School of Medicine, 1913; served during World War I; for many years affiliated with the Buffalo (N. Y.) State Hospital; died January 21, aged 63, of heart disease.

Grove, Charles C., Spring Garden, Va.; University College of Medicine, Richmond, 1911; died in Memorial Hospital, Danville, January 13, aged 65, of perforated abdominal aortic aneurysm.

Gurney, Charles Hazard, Chattanooga, Tenn.; University of the South Medical Department, Sewanee, 1900; also a graduate in pharmacy; member of the American Medical Association; died January 14, aged 83, of arteriosclerotic heart disease.

Hacker, Guy Leon ✠ Dallas, Texas; Baylor University College of Medicine, Dallas, 1931; clinical assistant professor of pediatrics at the Southwestern Medical School of the University of Texas; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; past president of the Dallas Pediatric Society; member of the Texas Pediatric Society; affiliated with Bradford Memorial Hospital for Babies and St. Paul's Hospital; died January 22, aged 43.

Harralson, John Henry, Central City, Ky.; University of Louisville Medical Department, 1915; member of the American Medical Association; served with the British Army during World War I; formerly member of the board of education; died January 27, aged 61.

Harris, John Hill, Bells, Tenn.; Vanderbilt University School of Medicine, Nashville, 1895; died January 14, aged 77, of bronchopneumonia.

Hartshorne, George Ewing, Tulsa, Okla.; University of Maryland School of Medicine, Baltimore, 1893; served during World War I; died in the Veterans Administration Hospital, Muskogee, January 19, aged 83, of arteriosclerotic heart disease.

Haskell, Claude Duane, Tarkio, Mo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904; member of the American Medical Association; served during World War I; on the staff of the Fairfax (Mo.) Community Hospital; died January 26, aged 73.

Hatfield, Nathan Cleveland, Fostoria, Ohio; Chicago College of Medicine and Surgery, 1912; served during World War I; died January 10, aged 63, of a fractured skull received when he fell on the stairs in his home.

Hekimian, Ivan ✠ Buffalo; University of Buffalo School of Medicine, 1927; assistant professor of medicine at his alma mater; served in the British Intelligence Service during World War I; member of the American Diabetes Association; fellow of the American College of Physicians; chairman of the Red Cross Medical Advisory Committee; on the staff of Buffalo General Hospital; died January 23, aged 54, of coronary thrombosis.

Hershberg, Raymond Arnold, Wauwatosa, Wis.; Marquette University School of Medicine, Milwaukee, 1934; specialist certified by the American Board of Internal Medicine; associate professor of medicine at Marquette University School of Medicine in Milwaukee, where he was affiliated with St. Joseph's Hospital; died January 26, aged 41, of coronary thrombosis.

Hess, James Mercer, Tylersburg, Pa.; College of Physicians and Surgeons, Baltimore, 1905; member of the American Medical Association; secretary-treasurer of the Clarion County Medical Society; served during World War I; died January 21, aged 67, of myocarditis.

Hickman, Warren Reynolds ✠ Logansport, Ind.; Indiana University School of Medicine, Indianapolis, 1930; specialist certified by the American Board of Otolaryngology; past president of the Cass County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; served during War II; fellow of the American College of Surgeons; affiliated with St. Joseph and Memorial hospitals; died January 29, aged 45, of carcinoma of the lung with metastasis.

Hodge, Samuel H., Knoxville, Tenn.; Lincoln Memorial University Medical Department, Knoxville, 1907; served in the Serbian army during World War I; for many years affiliated with Knoxville General Hospital, where he died January 21, aged 66.

Hollands, Augustus, Chicago; Chicago College of Medicine and Surgery, 1917; died February 23, aged 65, of coronary occlusion.

Hopkins, Theodore Arthur, Rockford, Ill.; Northwestern University Medical School, Chicago, 1942; member of the American Medical Association; on the staff of Rockford Memorial Hospital; died January 26, aged 33.

Howard, Lizbeth Miller, Stoneham, Mass.; Boston University School of Medicine, 1892; died in the Melrose (Mass.) Hospital January 23, aged 80.

Jaggard, Louis Francis, Iowa City, Iowa; Drake University College of Medicine, Des Moines, 1907; for many years medical missionary in the Belgian Congo of Africa; died January 20, aged 72, of coronary disease.

Jaynes, Manning, Glendale, Calif.; State University of Iowa College of Medicine, Iowa City, 1907; died January 10, aged 84, of arteriosclerosis.

Johnson, Hugh, Fort Smith, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1906; member of the American Medical Association; for many years county coroner; on the staff of St. Edward's Hospital; died January 14, aged 72, of coronary heart failure.

Jones, Clyde Thomas, West Jefferson, N. C.; University of Tennessee College of Medicine, Memphis, 1940; served overseas during World War II; on the staff of Ashe County Memorial Hospital in Jefferson; died January 29, aged 33.

Katske, Floyd, New York; Johns Hopkins University School of Medicine, Baltimore, 1941; served during World War II; died January 15, aged 34.

Kellam, Leewan Robert, Morgantown, Ky.; Columbia University College of Physicians and Surgeons, New York, 1945; served during World War II; on the staff of Muhlenburg Community Hospital in Greenville, where he died January 31, aged 31, of ketonemia.

Kelley, Charles James ✠ Cortland, N. Y.; Albany (N. Y.) Medical College, 1909; member of the American Association of Industrial Physicians and Surgeons; fellow of the American College of Surgeons; on the staff of Cortland County Hospital; attending surgeon Children's Home; died recently, aged 69, of cerebral hemorrhage and generalized arteriosclerosis.

Kinnaird, William, Los Angeles; Northwestern University Medical School, Chicago, 1901; member of the American Medical Association and the Idaho State Medical Association; formerly practiced in Idaho Falls, Idaho, where he was affiliated with Spencer Hospital; died January 24, aged 77, of carcinoma.

Kohler, Christian H., Minneapolis; American Medical College, St. Louis, 1887; Hahnemann Medical College, Chicago, 1887; University of Minnesota College of Medicine and Surgery, Minneapolis, 1898; affiliated with St. Barnabas and Eitel hospitals; died in Orinda recently, aged 82, of myocardial failure.

Kritzer, Henry Rowland, Hagerstown, Md.; Medical College of Virginia, Richmond, 1917; member of the American Medical Association; served during World War I; on the staff of Washington County Hospital; died in Veterans Administration Hospital, Perry Point, January 10, aged 57, of coronary thrombosis.

Loofbourow, Dorothea Gano ✠ Boston; University of Cincinnati College of Medicine, 1941; on the staff of Massachusetts General Hospital; died January 31, aged 48, of Parkinsonism and ventricular fibrillation.

McGowan, John Vincent, Cincinnati; Ohio-Miami Medical College of the University of Cincinnati, 1914; member of the American Medical Association; affiliated with Maple Knoll Hospital and Home for the Friendless in Glendale; died recently, aged 59.

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GOVERNMENT SERVICES

ARMY

Course in Ophthalmic Pathology.—A course in ophthalmic pathology will be conducted at the Armed Forces Institute of Pathology, Washington, D. C., May 14-18, according to an announcement by the Surgeon General. The purpose of this course is to provide a review of the histology of the eye, changes incident to growth and aging, acute and chronic granulomatous inflammation, injuries, cataracts, vascular diseases, diabetic conditions and intraocular tumors. Medical Corps residents in ophthalmology, pathologists and physicians are eligible to attend. Quota for the course has been set at 30 students. Applications should be submitted to the Office of the Surgeon General, Department of the Army, Attn.: Personnel Division, Career Management Branch, not later than May 1.

Specialists on Duty in Medical Service.—The Army Medical Service currently has 354 officers on duty who have been certified as specialists in various fields, the Surgeon General's office announced March 30. Of the total, 232 are in the Regular Army Medical Corps, 19 in the Regular Army Dental Corps and four in the Regular Army Medical Service Corps. The remaining 99 are medical officers belonging to the Reserve and National Guard now on extended active duty with the Army. In 1947, when the Surgeon General instituted the Graduate Professional Training Program, the Army had only 83 specialists in its Regular Medical Corps, plus 44 non-Regulars certified by specialty boards, for a total of 127. Seventeen Regular Army Medical Corps officers have been certified by American Specialty Boards in recent months, according to an announcement from the Office of the Surgeon General. Among them are 11 orthopedic surgeons, three general surgeons, one certified in dermatology and syphilology, one in neurology and one in psychiatry.

Decorations Awarded Medical Service.—The Army Medical service personnel in Korea had received 247 decorations from the outbreak of hostilities up to Dec. 1, 1950. Of these, 206 were given to enlisted men and 41 to officers. The decorations included four Air Medals, 40 Silver Stars and 176 Bronze Stars.

NAVY

Three Day Conferences at Great Lakes.—Thirty-four of the nation's medical research scientists met at Great Lakes Naval Training Center April 2 for a three day series of conferences on military preventive medicine and infectious disease research.

The chairman of the group was Dr. Colin M. McLeod, professor of microbiology, New York University College of Medicine and president of the Armed Forces Epidemiological Board. The group consisted of two of the six commissions directed by the Board, one on acute respiratory diseases and the other on streptococcal infections. Dr. John M. Dingle, professor of preventive medicine at Western Reserve University, Cleveland, was director of the first, while Dr. William S. Tillet, professor of medicine at New York University College of Medicine, directed the second.

The members exchanged information on progress of medical research at other armed forces installations and in various universities. Civilian consultants and staff members of Naval Medical Research Unit no. 4 at Great Lakes were present. Civilian consultants of NAMRU 4 attending the meetings were Drs. Clayton G. Loosli and William E. Lester of the University of Chicago; Drs. John W. Brown, C. Victor Seastone Jr., Robert W. Quinn and A. Fred Rasmussen of the University of Wisconsin and Burgess E. Jennings of Northwestern University Technological Institute.

The Epidemiological Board is made up of nine civilian physicians whose function is to stimulate medical research in the armed forces and to advise on problems of infectious diseases and preventive medical measures. The Commission on Acute Respiratory Diseases worked full time for the army during World War II. At Fort Bragg, N. C., it conducted research similar to that now being done at Great Lakes by NAMRU 4. The Commission on Streptococcal Diseases also did research and control work at Fort Bragg, Camp Carson and other army installations during the last war. Both commissions are now sponsoring the Streptococcal Disease Laboratory at Fort Francis E. Warren Air Force Base, Cheyenne, Wyo. The commission members meet once or twice a year, inspect work in hand, exchange information and compile reports. Midwesterners on the respiratory disease commission include Drs. George F. Badger, Alto E. Feller, Richard G. Hodges and William S. Jordan of Western Reserve University and Dr. Carl G. Harford of Washington University.

On the Commission on Streptococcal Diseases are Dr. C. Phillip Miller of the University of Chicago; Dr. Morton Hamburger, University of Cincinnati; Dr. Charles H. Rammelkamp Jr., Western Reserve University and Dr. W. Barry Wood Jr., Washington University.

Decorations for Outstanding Performance in Korea.—The following Navy medical officers serving with the Marines in Korea have been awarded decorations for outstanding performance of duty while in action against the enemy.

LEGION OF MERIT

Capt. Eugene R. Hering (MC, USN), Lemon Grove, Calif., (Gold Star in lieu f third award).

LETTER OF COMMENDATION

Lieut. (jg) George R. Farrell, (MC, USN), 4715 Hazel Avenue, Philadelphia.
Lieut. (jg) Ramsey MacCordy, (MC, USN), St. Petersburg, Fla.
Lieut. (jg) Henry Litvin, (MC, USN), 1604 67th Avenue, Philadelphia.

Medical Policy Council.—Rear Admiral Frederick C. Greaves, MC, USN, has been assigned to the staff of the Armed Forces Medical Policy Council and Chief of the Division for Coordination of Medical Military Affairs in the Office of Secretary of Defense. The position was formerly held by Rear Admiral Clarence J. Brown, MC, USN, now deputy chief of the Bureau of Medicine and Surgery. At present Admiral Greaves is assistant chief of the Naval Bureau of Medicine and Surgery for Research and Medical Military Specialties and also inspector general for the Bureau of Medicine and Surgery. He will be relieved as inspector general by Rear Admiral Leslie O. Stone.

Select 131 Seniors for Intern Training.—A total of 131 senior students who will graduate from medical schools throughout the United States in 1951 have been selected to serve their internship at U. S. Naval Hospitals beginning July 1, 1951, under the Navy's Graduate Medical Training Program. The students will be appointed lieutenants junior grade in the Medical Corps, Naval Reserve, on graduation and will then be ordered into the active military service and assigned to a Naval Hospital approved for intern training by the American Medical Association's Council on Medical Education and Hospitals.

AIR FORCE

Aviation Medical Examiners.—Two foreign and two Air National Guard officers are among the 62 medical officers who began six weeks training toward qualification as Aviation Medical Examiners at the School of Aviation Medicine, Randolph Field, Texas, on March 27. The two foreign officers in the class are Capt. Ignacio C. Diaz of Nicaragua and Capt. Hans K. Knoepfel of Switzerland. The National Guard officers are Maj. Jack R. Voskamp of Los Angeles, Calif., and Lieut. Bernard F. Wendt of Riverdale, Neb. The remainder of the class is composed of regular air force and reserve officers. The one colonel among the student officers is Domingo N. Monserrate, a reserve officer from Helena, Mont. Graduation will be on May 5.

CORRESPONDENCE

TELEGRAM FROM OSCAR EWING

The Editor
THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
535 North Dearborn Street, Chicago

Dr. Henderson's answer to my telegram of April 3 is merely a continuation of the misleading statements contained in the President's page of the March 31 issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Pamphlet in question was not reprinted for distribution by my office in 1949 or at any other time. Federal Security Agency has made only one distribution, which was in 1945. Since then occasional copies have been mailed out by agency in response to specific requests. Learned for first time from Dr. Henderson's answer that pamphlet has been reprinted by Government Printing Office for sale by Superintendent of Documents. I refuse to be held responsible for actions of Federal Security Agency taken before I became administrator or for actions taken by Government Printing Office or other government employees without my knowledge. The statement to which you refer is as objectionable to me as it can possibly be to Dr. Henderson and his attempt to make me responsible for it is a blow below the belt for which you and he should apologize.

OSCAR R. EWING,
Administrator Federal Security Agency,
Washington, D. C.

TELEGRAM FROM DR. HENDERSON

Hon. Oscar R. Ewing
Federal Security Administrator,
Washington, D. C.

I have in hand your wire concerning my recent reference to a Federal Security Agency pamphlet which carries the statement: "Social security and public assistance programs are a basic essential for attainment of the socialized state et cetera." You say that occasional copies of the pamphlet have been mailed out by your office since your tenure there but that you refuse to be responsible for such distribution. You state also that you refuse to be held responsible for actions of the Federal Security Agency before you became administrator, or for actions taken by Government Printing Office or other government employees without your knowledge. As you know, the pamphlet carrying this viciously un-American pronouncement is being distributed currently under the imprint of your office, and carrying the printing date 1949, when you were in charge there. As you state in your wire your own office mails these pamphlets out on request. You state however that the pronouncement advocating the socialized state is wholly objectionable to you. If this is the case, I would suggest in all kindliness that the reasonable manner in which to clarify your own position would not be in telegrams to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION but first by asking the Government Printing Office to cease reprinting and distributing the material attributed to your office.

Second, that since it is without your knowledge that your office is distributing the material, your staff be instructed accordingly.

Third, since your office's circulation of these socialistic principles first came to light in the United States Congress, that your responsibility for it be denied there, in order that your true position be clear not just to the medical profession but to the lawmakers of the nation.

We do appreciate your difficult position and are gratified to be advised that such a malevolently un-American pronouncement is not subscribed to by you. The Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION will be glad to reprint this telegraphic correspondence in THE JOURNAL so that your position will be clear to the profession.

ELMER L. HENDERSON, M.D.,
President, American Medical Association.

FEVER

To the Editor:—"Observations on the Epidemiology of Q Fever in Northern California," by Lennette and Clark in THE JOURNAL, Feb. 3, 1951, is prefaced by a review of the history of Q fever in the world and in the United States in particular. However, no mention is made in their introductory remarks of the occurrence of the disease in Eastern United States.

In order to stimulate further search for cases and outbreaks of the disease not only in the West and Middle West but also in the East, I should like to bring the following points to the attention of readers.

1. In 1949, Sigel of Philadelphia described the first outbreak of Q fever in the East (Q Fever in a Wool Processing Plant, read at the annual meeting of the American Public Health Association Oct. 25, 1949, New York). Sixty-seven workers in a wool processing plant were found to have positive complement fixation reactions with Q fever antigen. Thirty-nine had a titer of 1:64 or higher. The plant population at the time of the outbreak was 189. Thirty-seven of the reactors admitted to an illness varying in length and severity, compatible with a diagnosis of Q fever.

2. In the same year Korns reported an outbreak of the disease in a fat rendering plant in Syracuse, N. Y. (Health in New York State, Q Fever in Syracuse, *New York State Health News*, **26**:11, 1949). The plant employed 137 persons. It was uncertain how many persons were exposed to the infection. Eighty-six persons submitted to a blood test. Thirty-five of these showed positive complement fixation reactions in a significant titer; out of these, 26 had had a recognizable clinical illness.

3. In July 1950, two cases were reported from Rhode Island. Both men worked in the same plant, one was a wool sorter. The source of the infection was probably wool imported from California (Rhode Island Department of Health, Health News letter, vol. 4, no. 8, August 1950)

4. A Q fever survey among slaughterhouse workers of New York City was undertaken in 1949-1950 by me to ascertain the presence or absence of the disease in the industry. Seven slaughterhouses operating in the New York City limits were asked to cooperate in the survey. The four smaller slaughterhouses agreed to be surveyed, and the labor unions in these establishments cooperated. Blood samples were obtained from volunteers. Approximately 65 per cent of the working population of the cooperating slaughter houses were bled.

One hundred and fifteen blood samples were obtained in this manner from the employees of four slaughterhouses. The survey included only those connected with the slaughter of cattle. Sheep or pork slaughterers were not surveyed. The 115 volunteers had worked a total of 2,002 years in slaughterhouses. Several of the men had been in the industry for over 30 years, and most of the men had been exposed to the animals and to the diseases they may carry for more than 10 years. All the blood samples collected were tested by the complement fixation reaction against the nine mile strain of Coxiella burnetii at the virus research section of Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

Two of the serums showed a titer of 1:16, which is the lowest titer considered diagnostic of the disease. One serum showed a titer of 1:8 and two serums a titer of 1:4. Titers of less than 1:16 were regarded as doubtful in the diagnosis of the disease. The two men who had the titer of 1:16 were carefully questioned with regard to raw milk consumption, travel into endemic areas and recent illnesses. However, no history of illness could be elicited.

The occurrence of Q fever cases in Philadelphia, Syracuse and Rhode Island and the presence of antibodies in the New York slaughterhouse workers should come as a reminder that Q fever must be considered a possibility in the East and any case of atypical pneumonia should have Q fever complement fixation tests.

JAN LIEBEN, M.D.,
Epidemiologist,
Connecticut State Department of Health.

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FOREIGN LETTERS

LONDON

Earnings of Family Doctors under National Health Service.—*The Times*, London, Feb. 28, 1951, devoted a second leader to physicians' fees. Representatives of the British Medical Association are meeting the Minister of Health today, the article states, to discuss their claims for higher fees for family doctors. The state payment to specialists, family doctors and dentists form the main part, if not the whole, of their earnings.

State earnings are intended to secure for each member of the profession a distribution of total incomes in accordance with the standards originally suggested by the various Spens committees, set up under Sir Will Spens to assess physicians' and dentists' salaries. The inadequacy or insufficiency of any of these payments and the merit of the British Medical Association's claims cannot therefore be properly assessed by anyone outside the small circle of official negotiators unless impartial studies of the total incomes for physicians and dentists are made and published.

The original and provisional scale of fees for dentists brought them earnings much in excess of the markedly improved incomes which the scale was intended to make possible, and, despite several subsequent reductions, the average dentist still has a substantial and unintended financial advantage over the average family physician.

With regard to a proper relation between specialists' and general practitioners' incomes, the government was presented with two different views. The Committee on General Practitioners wanted not merely to preserve but to enlarge the wide overlapping between the earnings of the two groups that prevailed before the war, the aim being to enable men of higher ability, skill or responsibility to earn more than other doctors, whether in special or general practice. While the proportion of such men is greater among specialists, it is proposed, for the good of medicine itself, to reduce financial disparities between the two groups in order to attract more men of ability into general practice.

The Committee on Specialists, in effect though not in intention, rejected these aims. Its problems were not easy. It had to design a regular ladder of salaries to carry the young doctor through his training to full qualification and establishment as a mature specialist at about the age of 40.

The committee's system of "distinction awards," the article continues, was sound in principle but perhaps less sound in application. This system has served to secure reasonably high incomes for the abler specialists, despite the inevitable scaling down at the highest levels. The committee may well have gone too far in proposing higher incomes for some two thirds of all established specialists. The higher standards adopted seem almost to have abolished the overlap of incomes between the two groups of doctors, that is, specialists and general practitioners, in the prime of life, except for those general practitioners who may sacrifice quality of work in order to augment their earnings.

As things are, the family doctor has a real financial grievance, especially since his grievance is largely irrelevant to the real issue that should be agitated—how to secure facilities for the better care of his patients. The present system of distributing family doctors' fees, funds being shared among the family doctors according to the number of patients they have on their lists, blurs all differences in ability and quality of work, thus, leading most doctors, however overworked, to resist the entry of any newcomer who might relieve them of their load. It would appear easier to contemplate some improvement in fees coupled with the determined striving on the part of the British Medical Association to carry out measures likely to improve the quality of the family doctor service and spread the doctors' work more evenly and to effect proper economy in prescribing.

On the same page as the second leader, which deals with the fees for doctors, an article sets out a review of the comparative earnings of doctors, dentists and specialists. The "wage policy" of the Health Service, its standards of remuneration for the various branches of the profession and other workers in the profession and the interrelation of those standards are some of the least regarded features of the service. Wages, salaries and fees probably account for over half the cost of the service. A central deficiency in its wage policy is the failure to balance properly the remuneration of dentists, general medical practitioners and specialists.

The present earnings of the three professions have upset long-established differences in personal incomes, and any hope of a rational development of the dental services has been dashed, at least for the present. This has aroused discontent among the general practitioners. There has been no necessity for the increasing of income of a professional group in the service save in return for additional work. The nurses are overworked. The specialists in training should clearly no longer be underpaid or unpaid for much of their work, and so be obliged to recoup from their paying patients.

In future the service and not private fees should be the main source of incomes. The standards of public remuneration for the professions must therefore be related to the incomes from all sources which they might be expected to enjoy in normal conditions at different stages in their careers.

Owing to the abnormal conditions, the 1946-1947 incomes were no reliable guide for standards, and the earnings immediately before the war were therefore investigated by three committees with a common chairman, Sir Will Spens. The findings and recommendations of the Spens committees were related to the prewar incomes of established men in the three professions in the prime of their working lives.

Two thirds of the specialists earned $4,200 (£1,500) per annum; 9 per cent of these earned $14,000 per annum (£5,000). About one third of the dentists and one fifth of family doctors had the same income level as the middle third of specialists, with earnings of from $4,200 (£1,500) to just under $7,000 (£2,500) per annum. Thus the middle income groups, earning from $2,800 (£1,000) to $7,000 (£2,500), consisted of half the specialists, more than half the general practitioners and about 30 per cent of dentists.

The overlap (similar income levels between a proportion of specialists, general practitioners and dentists) was considered not large enough, and committees were set up to increase it, separate committees being formed for specialists, dentists and family doctors. The committee for dentists pointed out that most dentists were not making enough money to meet the minimum middle class expenditure, and they proposed substantial improvement. Similarly, the family doctor committee proposed higher incomes for the general practitioner, arguing that it would be disastrous to the profession and to the public if general practice was recruited only from the less able young doctors. The recommendations of both committees were correlated, and their joint aims, based on incomes earned in the 1939 prewar period, that is, before the introduction of the health service, were, (1) to reduce the proportion of dentists' and family doctors' earnings under $2,800 (£1,000) per annum to about 40 per cent and 27 per cent, respectively, (2) to bring about 40 per cent of each group into the $2,800 to $4,200 income range and (3) to put into the $4,200 (£1,500) to $7,000 (£2,500) income level, 15 per cent instead of 10 per cent of dentists and 30 per cent instead of 20 per cent of family doctors.

It was hoped that, as a result of these proposals, about 70 per cent of family doctors instead of 54.5 per cent would then earn incomes from $2,800 to $7,000 per annum, thus reaching an income level equal to that earned by over half the specialists. Similarly, 55 per cent instead of 28 per cent of dentists would be in this income level. Put in another way this meant that an experienced single-handed family doctor could earn for full but not unduly heavy work about $560 (£200) a year more than a similarly placed dentist, giving incomes of an average standard based on 1939 values of $5,040 (£1,800) for the doctor and

The items in these letters are contributed by regular correspondents in the various foreign countries.

$4,486 (£1,600) for the dentist, earnings rising to more than $560 (£200) above these figures being exceptional.

The committee on specialists seems to have disregarded these findings. What was questionable in its report was not the suggested salary ladder up which budding specialists were to climb to full qualification but the income obtainable at the top by mature specialists. For the latter as a group, the committee, without actually saying so, proposed a substantial rise, while reducing to $14,000 (£5,000) per annum the income of the most prosperous minority of specialists (5 per cent to 7 per cent), at the same time seeking to raise to the minimum income of $7,000 (£2,500) the majority (63.5 per cent) who were earning less. In 1938-1939 the average income of specialists aged 40-54, the peak earning years, was $7,000 (£2,500); for the 55-59 age group it was $6,048 (£2,160), and for older men it was considerably less. The highest of these averages became the committee's minimum for all mature specialists, and, by "distinction awards" granted by a professional committee, 20 per cent of specialists were to earn $8,400 (£3,000), 10 per cent were to earn $11,200 (£4,000) and 4 per cent were to earn $14,000 (£5,000) per annum. The new average income proposed that a specialist from the age of about 40 to retirement should earn $7,980 (£2,850) per annum.

The implication of this recommendation was that not more than 5 per cent of family doctors in the prime of life were deemed worthy of earning as much as the lowest paid specialists, and beyond the age of 40 the overlap in incomes between the specialists and family doctors was virtually abolished, not enlarged as the committees originally intended.

No family doctor can attain the income now within the reach of every mature doctor classed as a specialist, except by deliberately sacrificing quality of service to quantity of patients. To earn $7,700 (£2,750) per annum, a family doctor in a town would have to take on 4,000 patients, at least 60 maternity cases a year, along with other work bringing in $560 (£200) to $1,120 (£400) a year. Few doctors can do so much, for there are not sufficient patients. Those who do work at such a pressure must at best give mediocre service.

For the dentist it was sought to convert the Spens standard (that is, the committee that gave a composite report to the government on the recommended future earnings of various branches of the medical profession and which the government accepted in spite of obvious discrepancies in principle), but the scale of work was based on an inadequate knowledge of the dentists' expenses, of the time taken on particular operations and on their capacity for work in conditions of high demand.

Prior to the last war the upper quarter of dentists had net incomes of $3,080 (£1,100) and upward, with no superannuation benefits. For the experienced dentist under the Spens' standard of earnings from all sources, annual income is now about $5,040 (£1,800); the upper quarter of such dentists earn from the state alone between $7,640 (£2,800) and $18,480 (£6,600), even assuming average expenses as high as 52 per cent of gross receipts. There have since been cuts in the dental scale of earnings, but the estimates for 1950-1951 suggest that the average dentist will be expected to earn $5,964 (£2,130), against $4,200 (£1,500) of the average general practitioner (family doctor). These disparities in state payments do not seem justified by any evidence that dentists, although now working longer and faster than before, are working any harder than family doctors as a group.

GENERAL MEDICAL SERVICES' COMMITTEE

A general meeting of the General Medical Services Committee (reported in the supplement of the *British Medical Journal*, March 17, 1951) was held on March 6, under the chairmanship of Dr. S. Wand, when the chairman and others who had formed the deputation to the Minister of Health and the Secretary of State for Scotland on Feb. 28, 1951, gave a report on the results of the interview. The chairman said that both ministers had appreciated the arguments and claims put forth on behalf of the profession, and he read a letter which had now been received from the Minister, stating that as a result of these first discussions it appeared that there was a good prima facie case for reviewing, as a matter of urgency, both the adequacy of the total remuneration of general practitioners and its distribution. Dr. Wand pointed out that this was the first time that a Minister of Health had put in writing that a good prima facie case existed for review of general practitioner earnings. The Minister also suggested that there should be another meeting between himself and the General Medical Services Committee before the end of April. Although some members of the committee expressed disappointment that the meeting should be delayed so long, there was general approval and cautious optimism about the Minister's attitude.

PARIS

ACTH and Cortisone in Asthmatic Conditions.—At the medical clinic of the Cochin Hospital, Professors P. Harvier and P. Coste and their associates treated 12 asthmatic patients with pituitary adrenocorticotropic hormone (ACTH). It was given by injection every six hours, 20 to 100 mg. every 24 hours. The total dose was 80 to 400 mg., and the treatment was single and never repeated. Improvement was definite and rapid in most of the cases. Difficult breathing, polypnea and bradypnea were alleviated and disappeared; cough became easier and bronchial rales subsided. The chest circumference and vital capacity increased during the first 24 hours. In four patients with a daily expectoration of 100 cc., the drainage of bronchi was complete on the third day of treatment. In 11 patients, improvement of the general condition was noted, as well as improved appetite and sleep with an increase of 2 to 8 Kg. in weight. Diuresis was increased, rising from 1,000 to 1,800 cc., tachycardia disappeared. In one 56 year old patient, sexual potency returned; three other patients experienced a regrowth of the beard. In three patients chronic eczema disappeared.

Laboratory examinations showed an extremely early fall of eosinophils; in four out of five patients the sedimentation rate was brought back to normal. The 17-ketosteroid level was not modified by the treatment. In five patients histaminemia was considerably reduced by the treatment; in three patients the modification took an opposite trend. The duration of improvement due to pituitary adrenocorticotropic hormone varied widely; in one man it lasted for five months; in three, for three months, and in one for two months. Of the six female patients, five experienced relapses within three weeks to one month after cessation of treatment. Total failure was experienced in a 56 year old patient; his general and asthmatic condition was improved by cortisone. No incident was noted during treatment with pituitary adrenocorticotropic hormone.

Aureomycin in Mammary Complications.—In the past penicillin has been used after delivery not to check mammary suppuration. Recently aureomycin was tried with great success in Lyons in Dr. Brochier's maternity ward. In seven cases of lymphangitis, essential or with parenchymatous nodules, reported by R. Rochet and his associates, recovery was complete; the same result was also obtained in 20 cases (four, essential lymphangitis; six, lymphangitis accompanied with deep induration, and eight with deep induration and subcutaneous edema). The daily dose was 4 Gm. divided into equal doses; the duration of the treatment varied from three to four days. As a rule aureomycin was well tolerated; toxicity consisted in one case of morbilliform edema, one of nausea, and seven cases of mild diarrhea; in the babies, there were some benign digestive incidents; some refused to take the breast, stools were more frequent and one child had a scarlatiniform erythema which regressed rapidly. The elimination of aureomycin through mammary secretion is now being studied.

Other Uses of ACTH and Cortisone.—At a meeting (Nov. 8, 1950) of the French League Against Rheumatism, Professors Coste and Oury reported that gold dermatitis in a case of chronic polyarthritis was improved with an initial daily dose of 300 mg. of cortisone followed by daily doses of 100 mg. and then decreasing doses. A relapse occurred five days after discontinuation of the treatment, improvement again appearing 18 hours after one injection of pituitary adrenocorticotropic

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hormone (ACTH). The same authors reported the disappearance, within 12 hours, with an injection of pituitary adrenocorticotropic hormone of a gigantic urticarial eruption following aureomycin therapy. Professors Coste and Turiaf observed improvements in eczema with cortisone. Coste and Mme. Lacronique reported a case of coxitis, aggravated by priscoline® (2-benzyl-2-imidazoline hydrochloride) and intra-articularly administered procaine, which was improved with pituitary adrenocorticotropic hormone, the sedimentation rate falling from 18 to 2. When summarizing his first observations, Coste stated that the best indications for cortisone are Hench's self-limiting diseases and not those of long duration. M. P. Weil reported the curious case of a patient suffering for years from several attacks of urticaria, Quinck's edema, glottic edema and sciatica followed by an intestinal crisis; he improved considerably with a total of 1.5 Gm. of cortisone and experienced no relapse.

Treatment of Brucellosis with Aureomycin.—There were 1,624 human cases of brucellosis in France in 1947, 1,673 in 1948 and 1,400 in 1949. The ratio of declared cases to estimated cases is 1:6.4, so that the annual incidence is about 9,000 cases. L. Carrère G. Renoux, at a meeting of the National Academy of Medicine, listed the following annual losses (in French francs) incurred through human and animal brucellosis: bovine cases, 35,000,000,000; ovine cases, 600,000,000, and human cases, 1,632,000,000, a total of 37,232,000,000. These data add to the report presented by Professors M. Janbon and L. Bertrand of Montpellier (where brucellosis is prevalent) to the Medical Society of the Paris Hospitals concerning the use of aureomycin in 50 patients with brucellosis, each of whom was observed for a minimum period of six months. The authors noted immediate effects on septicemic and general manifestations and on hepatosplenic syndromes, but they stressed that combined antibiotic and vaccine therapy was necessary in cases of glandular hypertrophy and osteoarthritis. They found that, with a daily dose of 4 Gm. of aureomycin for one month, permanent clinical recovery was obtained in 85 per cent of cases; in 15 per cent, a clinical relapse occurred within 15 days to three months after the discontinuation of aureomycin. The basic cause of relapse is the presence of lymph node and bone marrow foci. While they emphasize the efficacy of aureomycin in human brucellosis, they recommend the use of associated biologic therapy in order to accelerate immunizing processes.

Death of Professor Vincent.—Prof. H. Vincent's death represents the loss of an eminent French scientist. He was the contemporary of Pierre Bazy, Fernand Vidal, Ch. Achard, Ch. Richet and A. d'Arsonval. For years, he was president of the Academy of Sciences; he was a great physiologist, biologist and clinician. His innumerable works deal with the most varied fields, such as the role of the liver in alexin production and the antibiotic role of bile. His works on physiological hyperthermia, which may cause death by stopping respiration, are well known. He made important epidemiologic studies, and his works on typhoid (especially on enterotoxins and neurotoxins) are classical. Universally known are also the specific serums he prepared. A variety of ulceromembraneous angina, known as Vincent's angina, was discovered by him.

BRAZIL

Tuberculin Reaction on Skin Injected with Histamine.—The skin sensitivity to tuberculin can be temporarily diminished by the action of different factors of a nonspecific nature. This fact, well established by several experimental studies for local or general edematous or pre-edematous conditions, is receiving little attention in medical practice. Starting from the studies performed with the Aldrich-McClure test, which demonstrated that the fluids injected into the derma are more rapidly absorbed by the edematous or pre-edematous skin, and from the experiments of Seeberg with several agents causing edema, Dr. A. de Oliveira Lima, of the Department of Dermatology, University of Rio de Janeiro, studied the action of the intradermal injections of histamine, as a hydrop genous agent, on the tuberculin test. For this study, for the first time performed with histamine, 20 white males were selected; their ages ranged from 18 to 42, all were positive reactors to tuberculin. None of them presented dermographism or any other edematous condition. On the day of the test, each patient received, through the intradermal route, in the forearm, two doses of 0.1 cc. of a solution containing 0.1 mg. of histamine diphosphate per cubic centimeter. Thirty minutes later, the region was injected with 0.1 cc. of raw tuberculin diluted to 1:1,000 in isotonic sodium chloride solution. As a control, the same solution of tuberculin was injected in the normal skin of the corresponding region of the other forearm. The tuberculin injections were performed according to the Mantoux technic. The reading of the reactions was done after 48 hours, a record being made of the diameter of the skin reactions. A record was also kept of the diameter of the papules caused by histamine after 30 minutes. Tuberculin tests which, after 15 to 30 minutes, caused urticarious papules in normal skin were excluded, in order to avoid one of the principal causes of error in the final interpretation of the results.

The results of the experiment confirmed the findings of other authors that the localized edema has a great influence on the intensity of the tuberculin skin reaction, as a certain part or even all of the antigen injected into the papule caused by histamine to be taken into the blood stream before its fixation by the local antibodies. Dr. Lima chose histamine as the hydropigenous agent in order to secure results comparable to those normally found in the practice of the skin tests. It is not rare for such substances as tuberculin, trichophytin, oidiomycin or sporothricin to cause urticarious papules during the first 30 minutes, similar to those produced by histamine, and caused either by the antigen itself or by one of its components, or independent of the nonspecific sensitivity of the skin (dermographism). By analogy, these papules might take out part or all of the injected antigen, giving a false result. This action could explain many of the contradictory or unexpected results obtained in tests of late reading. From Dr. Lima's findings as well as from those previously referred to, it would be highly convenient not to interpret tests performed with those antigens without previously inquiring whether the patient presents any edematous condition, local or general, or whether the antigen caused, during the first 30 minutes, any urticarious reaction. This conduct would allow a more correct interpretation of tests performed in normergic or mesergic patients, in which a small reduction of the antigen might lead to a doubtful or even negative result.

Anti-Plague Work.—Plague is still an important public health problem in Brazil, as in a large section of the country the disease is endemic and a great number of cases still occur. The history of plague in Brazil began in 1899, when the principal ports of the country (Rio de Janeiro, Santos, Recife, Bahia) were contaminated. The first chapter of that history ended in 1938, when the last scattered human cases were registered in the southern part of the country (states of Rio de Janeiro and São Paulo). Since 1939 the disease has been reported only in the rural sections of the northeastern states (the bulge: states of Piauhy, Ceará, Parahyba, Pernambuco, Alagoas, Sergipe and Bahia). During the first half of the last decade (1939-1943) 769 human cases of plague were registered (annual average 154); during the second half of the same period (1944-1948) the number of cases increased to 1,153 (annual average 231), including 386 in 1948. During the year 1949, 96 cases were registered, mainly in the interior of the states of Bahia (76.7 per cent) and Pernambuco (11.8 per cent). The mortality rate of plague is not high in Brazil, and is decreasing progressively with the use of sulfonamides. In 1934 the mortality rate was 33 per cent; the rates for 1945, 1946, 1947, 1948 and 1949 were 22, 21, 13 and 7.3 per cent respectively.

The work against plague is conducted by the federal government through the national department of health. The plague division includes 43 physicians, 32 laboratory technicians and 1,360 inspectors. The organization includes a central administrative and epidemiologic office in Rio de Janeiro and 24 field districts. Each district has a local office with a field laboratory and conducts a program of four main points: isolation and medical care of the human cases of plague, rat destruction

measures, rat-proofing measures at the dwellings to protect man against the rodents and health education of the public with particular emphasis on the protection against plague. The work against plague now covers five states with more than 200 counties. A recent improvement in the work is represented by the use of avirulent, live immunizing material instead of the old Haffkine type of vaccine.

Preference Given to Myomectomy.—Dr. F. Victor Rodrigues, assistant professor of gynecology, University of Rio de Janeiro, reported his study on 336 cases of uterine myomas treated surgically in the department of gynecology and presented an analysis of such cases to stress the advisability of myomectomy instead of radical hysterectomy, whenever the former operation is not exceedingly difficult. The operations performed in those 336 cases were as follows: 78 abdominal hysterectomies, 15 vaginal hysterectomies, 115 subtotal hysterectomies, 22 fundic hysterectomies and 106 myomectomies. Thus, myomectomy was the method used in 31.5 per cent; if myomectomy and fundic hysterectomy are considered together, the resultant total of conservative operations is 128 (38.1 per cent). To point out that the preference given to myomectomy is relatively recent, Dr. Rodrigues divided the whole period considered (1940-1950) into four successive epochs (1940-1942, 1943-1945, 1946-1948 and 1949-1950), during which the percentage of myomectomies increased steadily from 14.5 per cent in the first period to 45.5 per cent in the last. Particularly important was the fact that myomectomy was the operation performed in 82.4 per cent of the patients under the age of 40.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The following statement was adopted on March 18, 1951 by the Joint Committee on Medical Education in Time of National Emergency representing the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges.

DONALD G. ANDERSON, M.D., *Secretary.*

REPORT OF THE JOINT COMMITTEE ON MEDICAL EDUCATION IN TIME OF NATIONAL EMERGENCY

The Joint Committee on Medical Education in Time of National Emergency, which represents the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association, has studied carefully the presentation by Dr. Howard Rusk, on February 12, of the Health Resources Advisory Committee's estimates of the present needs for, and means for, increasing further the production of physicians.

Representatives of the Joint Committee and Dr. Rusk's Committee met on February 28 to discuss the basis for these estimates. Following this, the Joint Committee met in Washington on March 8 with Dr. Rusk's Committee. The Joint Committee met again on March 18 in Chicago at which time the following statement was approved:

The Joint Committee agrees that the proposed mobilization requires that close attention should be given to increasing further the production of well trained physicians. It seriously questions, however, whether the estimates presented by Dr. Rusk's Committee should be accepted as fixed and definite goals.

In the Appendix attached to the statement are presented specific criticisms with respect to the estimates offered by Dr. Rusk's Committee.

The Joint Committee does not believe that the evidence presented to it is sufficient to necessitate embarkation on a program of acceleration. The price of acceleration has proved to be lowered quality of graduates, exhaustion of faculties and serious curtailment of research. Because of the possibility of weakening one of this nation's major resources, this is a greater price than now appears to be justified. The Joint Committee, therefore, does not at this time recommend that the medical schools adopt an accelerated program.

The Joint Committee does urge each medical school to examine again its resources and needs with the aim of increasing its enrolment and output to the fullest extent that is consistent with the maintenance of high quality in education and research. In this connection it should be noted that in the past 10 years the freshman classes have increased 23 per cent, an expansion equivalent to the opening of at least 15 new medical schools. The production of physicians is also being increased further as a result of the falling attrition rate in the medical schools.

It is recognized that additional financial support and, in many instances, expanded clinical facilities will be needed if the schools are to materially increase their present enrolment and that active steps may be needed to meet these needs.

The Joint Committee is of the opinion that it is impossible to set specific goals as to the number of additional physicians that will be required to meet the nation's needs in the present or possible future emergency or as to the number of additional students that each medical school should attempt to enrol. The need for physicians is influenced by many unpredictable factors, such as advances in therapy, improvement in transporation and increased use of hospital facilities and of technical assistants, which will increase the number of patients to whom individual physicians can minister satisfactorily. On the other hand, military requirements, civilian disasters, an aging population, increasing numbers of women in industry and speed-up factors which may be a part of the picture of mobilization tend to increase health problems. It is, therefore, impossible to predict accurately the exact number of physicians that will be needed at any specific future time.

The rapid production of half-trained men will make statistical charts look better but will not improve the health of the nation. The current standards of medical education have not been achieved without a struggle. It is the responsibility of the medical educators to maintain standards and thus to insure the continued improvement in the health and welfare of the nation.

The Joint Committee recalls to the attention of the medical schools its recommendations with respect to the medical curriculum in time of national emergency as set forth in its statement dated Nov. 1, 1950.

"For the majority of medical schools the committee recommends as an essential during an extensive emergency or war that the curriculum extend over four 12 month years . . . As long, however, as vacation is permitted after completion of college, and medical schools continue to commence in September, three 12 month and one 9 month years are recommended."

The reasons for recommending this lengthened course and the types of instructional programs, including R. O. T. C. programs, that could be encompassed in such a lengthened academic year have been set forth in detail in the statement of Nov. 1, 1950 and do not need to be repeated at this time. Since it would now appear that no general acceleration of higher education is expected at this time, the Joint Committee recommends that, for the present, in addition to permitting a vacation between the completion of college and the commencement of the medical school, a vacation be allowed between the first and second years of the medical school course, since this is a period of recuperation and readjustment at a critical point in a student's course that should be preserved as long as feasible.

The Joint Committee, in making the above recommendations, recognizes that changes in the national or international situation may at any moment require a revision of these recommendations. If and when such changes occur, the Joint Committee will be prepared to act promptly.

DR. STOCKTON KIMBALL, *Chairman.*
DR. JOSEPH C. HINSEY.
DR. A. C. BACHMEYER.
DR. DEAN F. SMILEY.
DR. GEORGE BERRY.
DR. HERMAN G. WEISKOTTEN.
DR. HARVEY B. STONE.
DR. VICTOR JOHNSON.
DR. DONALD G. ANDERSON, *Secretary.*

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Appendix

An analysis of the over-all national needs for medical and health manpower during this period of national emergency was presented by Dr. Howard A. Rusk in a paper entitled "Medicine, Mobilization and Manpower," delivered in Chicago before the Congress on Medical Education and Licensure on Feb. 12, 1951. This analysis by the Health Resources Advisory Committee of the National Security Resources Board sets specific goals for the medical schools for increasing further the production of physicians.

In 1954, according to the report, 87 per cent of the physicians will be devoting themselves to civilian care, 9 per cent to the armed services and 4 per cent to certain special needs. The chief problem, thus, is civilian care.

The very method relied on by the committee to estimate further civilian "needs" of this country for physicians makes inevitable the conclusion that the output of physicians will be insufficient. For example, if the number of physicians living in 1949 had been 100,000 more than the 201,300 reported, the method used would still have predicted a large deficit of physicians in 1960.

On the basis of an analysis of the figures reported by the Committee the following points are made:

1. The crude physician-population ratio is not a satisfactory statistic to indicate the availability of adequate medical care. The national distribution of physicians, the local accessibility of physicians, the availabilty of specal services and of diagnostic and therapeutic facilities and, above all, the quality of the service rendered are among the important features that help to determine whether adequate medical care is available. The report, however, does not consider these points. It is based on maintenance of a ratio of one "active" physician to 845 civilians for the nation, the ratio existing in 1949. (When all living physicians are counted there was a ratio of one physician to 741 persons in the United State in 1949.)

2. Even if one were to accept the "active" physician-population ratio as a satisfactory criterion for measuring the supply of physicians' services, the actual figures used in the report are debatable. The total number of living physicians in 1949, Dr. Rusk's Committee's base year, is taken from the American Medical Directory and can be assumed to be correct. From this number has been subtracted the estimated number of inactive physicians. For 1949, this figure is estimated by the Committee as 23,400. The method of estimating the number of inactive physicians is based on a study reported by the Committee's statistical consultant in 1943. Its applicability in this instance is questionable. Thus, according to the American Medical Directory there were in 1949 only approximately 6,700 physicians not in private practice and only 9,700 retired and not in practice of any type, a total of 16,400 "inactive" physicians, as compared with the Committee's figure of 23,400. In an extreme national emergency, it is logical to believe that some of these 16,400 qualified physicians might well be drawn back into medical service.

3. The estimate of the number of physicians available after 1949 is based on the age distribution and life tables and on the assumption that the medical schools will graduate 6,000 students annually from 1953 to 1960 and that during this same period there will be an annual increment of 500 foreign graduates. The mortality tables used may yield higher death rates than is actually found true for physicians. At least, the American Medical Association has some evidence pointing in this direction. The graduates between 1953 and 1960, according to estimates by the Association of American Medical Colleges, will likely average 6,500 or higher. The increment of foreign graduates may be increased as a result of the pressure of hospitals for interns and residents and other factors.

4. The assumptions are made that during an emergency period physicians must carry on as usual with no increase in load and that more efficient methods of handling health needs will not be utilized.

Actually, during World War II, the physician-population ratio was one to well over 1,200; yet, during this period, according to the usual indices, the health of the country improved. It is now proposed that one "active" physician to 845 civilians is necessary, although even since World War II developments in medical care make the individual physician more effective than ever before. If the ratio of one physician to 950 civilians were used and all the other estimation methods of the report followed, the projected physician population would be more than adequate to care for the health and welfare of the country through 1960.

5. Included in the 1949 physician-civilian population on which the report is based are physicians in industry, rehabilitation and public health services, in both state and federal governments, and medical school teachers. For the years after 1949, however, the assumption is made that the staffing of these services must be in addition to the civilian needs and must in no way lessen the civilian requirements. No justification for this shift is given. By it, an additional 8,400 physicians are estimated as required in 1954 and 10,300 in 1960.

6. Civilian Defense states that it will require 3,300 physicians by 1954, increasing to 4,300 in 1960. Because of the restricted nature of the basis of these requirements, a discussion of them is not in order. It appears, however, that the equivalent of some 300 physicians are included in the estimate for desk positions and that the remaining three to four thousand constitute a reserve. It is not clear why this reserve, which certainly cannot be expected to remain inactive, should not be included in the group of physicians servicing the civilian population.

7. For industrial needs, 1,500 physicians over and above those now existing are stated as required for 1954 and 2,000 by 1960. It is questionably assumed that these physicians are not to lessen the work of the physicians treating the civilian population.

8. According to the estimates made by the United States Public Health Service 1,200 more doctors will be needed in health departments by 1954. It is assumed that the work of these physicians will in no way lessen the need of the civilian population for the present type of medical care received.

9. The requirement of 500 additional physicians to devote themselves to full time teaching in the medical schools is based on estimates made by the Federal Security Agency. It is the number necessary to fill existing vacancies in medical schools. No attempt was made by the Committee to estimate the needs of the medical schools should they expand and accelerate as advised by the Committee.

10. A troop strength in 1954 of 5,000,000 is assumed by the Committee. The use of a single ratio to determine physician needs for the armed forces is no more justifiable than it is in the civilian population. The armed forces requirements, nonetheless, are based on a requirement of one physician for every 270 troops. Under peacetime conditions, even in case of an emergency situation such as exists today, the number of physicians required is materially less than will be true during more active and widespread troop activities. For large numbers of young men in basic training camps, one physician for every 270 troops seems unjustifiably high. During a national mobilization, a certain number of physicians may have to stand by doing virtually no medical work, but such numbers can be minimized. The utilization of physicians during the last world war was admittedly wasteful. It is hoped that steps can be taken to prevent such a waste this time. Lowered military requirements may be possible.

11. The high quality of medical education that has been achieved in this country during the past 40 years is the result of the close ties between research and teaching. In the report, no mention is made of the importance of medical research, either as an end in itself or as a means of maintaining quality instruction in medical schools. Continuation of research on full scale may prove to be fully as important as increased output of physicians.

SUMMARY

The specific goal of 22,000 additional physicians by 1960, above anticipated production, set by the Committee for the medical schools is based on a series of assumptions that are debatable. Other equally sincere estimates might vary greatly from this figure. The statistical methods relied on by the Committee are also open to question. That the medical schools have a great responsibility in helping to improve the health and welfare of the country is not to be questioned. How this can best be done is a problem which deserves the most thorough consideration by the medical schools, the medical profession, other interested civic groups and governmental agencies. If this country is to prevail over its enemies, it will not do so by numbers but by the superior quality of its educational programs and by its superiority in research and other forms of intellectual productivity.

RESIDENCY INFORMATION SERVICE

Beginning next month, the Council will make available to physicians and hospitals throughout the country a new service which will provide information regarding the availability of appointments to approved residencies. Under the plan to be put into effect, a list of residencies in approved hospitals in which positions are open will be furnished to physicians on request. These lists, to be revised monthly, will provide information regarding the number of positions open, date available, the name of the chief of service, the stipend paid and the person to whom the application should be made.

Hospitals interested in having their available residency positions listed in this manner will be furnished, on request, a brief form on which the pertinent data regarding the service will be reported. These positions will be included in the monthly lists, as revised, for as long a period as the hospital desires. The hospital will be furnished a number of postcard forms at the time it originally requests a listing, which will be returned to the Council prior to the fifteenth of each month, as long as the position remains open. When the hospital discontinues returning this form, the position will be considered to have been filled, and it will be removed from subsequent lists.

Hospitals that have residency appointments available at this time and wish to be included in the May list should communicate with:

Residency Information Service
Council on Medical Education and Hospitals
535 North Dearborn Street
Chicago 10.

Physicians interested in receiving the list of available appointments should write to the same office.

MEDICAL MOTION PICTURES

Pyloromyotomy for Infantile Pyloric Stenosis: 16 mm., color, sound, showing time 17 minutes. Prepared by John L. Madden, M.D., Chief, Department of Surgery, St. Clare's Hospital, New York. Produced in 1950 by and procurable on rental or purchase from Sturgis-Grant Productions, 314 East 46th Street, New York 17.

This film shows the technique of a Ramstedt pyloroplasty for hypertrophic pyloric stenosis. It begins with an animated drawing of the stomach to show the lesion and how it produces the signs and symptoms characteristic of infantile pyloric stenosis. A brief historical development of the operation is presented. The case history is given and the method of palpating the tumor is shown. The deep peristaltic waves, so characteristic of pyloric obstruction in an infant, are beautifully demonstrated.

The abdomen is opened through a right paramedian incision. The stomach and transverse colon are then pulled out of the abdomen, revealing the tumor mass at the pylorus. The pathological findings are well demonstrated. A long incision, halfway between the greater and lesser curvatures of the pylorus, beginning at the pyloric duodenal junction and extending up onto the stomach, is made. The fibers of the hypertrophied pylorus are separated by careful blunt dissection until the mucosa protrudes up through the incision. A colored drawing is presented to show how the incision releases the obstruction at the pylorus in a transverse plane. A suture is placed at the lower end of the incision to control bleeding. A small piece of absorbable gelatin sponge is laid into the wound caused by the separation of the pyloric fibers. The postoperative course and feeding regimen are presented.

The film is very good and demonstrates well the technique of the Ramstedt pyloroplasty. It could be recommended for showing to medical students, interns, general practitioners, surgeons and pediatricians. The photography is excellent.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Cities: Liability for Malpractice of Volunteer Physician.—The plaintiff sued two physicians and the City of New York for damages for malpractice alleged to have occurred while he was a patient in a hospital operated by the city. One of the physicians was not served with summons and the other was dismissed, so the case proceeded against the city only. From a judgment in favor of the city, the plaintiff appealed to the supreme court, appellate division, first department, New York.

The law is well settled, said the appellate division, that in the absence of statute the relation between a hospital and the physicians and nurses who serve in it is not one of master and servant, and that it is not liable for their negligence in the treatment of patients. The plaintiff sought to hold the City of New York, however, under section 50-d of the General Municipal Law, the pertinent provisions of which are as follows: "Every municipal corporation, notwithstanding any inconsistent provision of law, general, special or local, shall be liable for and shall assume the liability, to the extent that it shall save him harmless, of any physician or dentist rendering medical services or dental services of any kind gratuitously to a person in a public institution maintained in whole or in part by the municipal corporation, or in the course of a home-care service maintained by such public institution, for damages for personal injuries alleged to have been sustained by such person by reason of the malpractice of such physician or dentist while engaged in the rendition of such services. Every such physician or dentist, for the purpose of this section, shall be deemed an employee of the municipal corporation, so maintaining such institution, notwithstanding that the municipal corporation derived no special benefit in its corporate capacity." This statute, said the court, enacted in its original form in 1937, appears to have been adopted for the purpose of indemnifying physicians and dentists who have rendered professional service gratuitously in public institutions against claims for malpractice. The plaintiff contended that it makes the municipality liable for negligence of these physicians unless the patient pays for the medical services rendered. It is conceded in this case that the physicians who attended the plaintiff were supplied by, and were on the regular paid staff of, a public hospital and that in this sense they did not render their professional services to the patient gratuitously. The defendant contended that the word "gratuitously," as used in the statute, refers to whether the doctors were working for nothing rather than to whether the plaintiff was to pay for his care and treatment at the public hospital. The defendant's interpretation, said the court, is the more natural one.

The true object of this statute was evidently to encourage physicians and dentists to donate their services for the benefit of patients in public institutions by indemnifying them against claims for malpractice. Doctors in public hospitals fall into two categories, those who are on the paid permanent staff, and others who have no connection with the hospital except that they voluntarily and gratuitously offer their services in the treatment and care of the sick and maimed. In this second category are many of the leading practitioners and specialists in the medical profession. These eminent physicians, whose services are offered without thought of compensation, are continually exposed to the hazard of action against them for real or fancied malpractice. In the absence of statute, the municipality is not itself liable for the negligence of these physicians and may not, even if so inclined, indemnify them in the event of an adverse judgment. The purpose of section 50-d of the General Municipal Law was to remedy this situation by transferring to the municipality the burden of potential liability to which such physicians had theretofore been exposed. Since the physicians who treated the patient in this case were supplied by and were on the regular paid staff of the city hospital, the court concluded that they did not render their services gratuitously and that the defendant, therefore, was not responsible for their malpractice, if any. Accordingly the judgment in favor of the City of New York was affirmed.—*Schmid v. Werner, 100 N.Y.S. (2d) 860 (New York 1950).*

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MEDICAL LITERATURE ABSTRACTS

AMERICAN

A.M.A. Am. Journal Diseases Child., Chicago

81:179-312 (Feb.) 1951

Precocious Sexual and Somatic Development in Boys Due to Constitutional and Endocrine Factors. W. W. Engstrom and P. L. Munson. —p. 179.

Possible Role of Pleuropneumonia-Like Organisms in Etiology of Disease in Childhood. H. J. Carlson, S. Spector and H. G. Douglas. —p. 193.

Relationships Between Blood Lipid and Blood Protein Levels in Nephrotic Syndrome. E. M. Thomas, A. H. Rosenblum, H. B. Lander and R. Fisher.—p. 207.

Plan for Permanent Organization of International Pediatric Association. H. F. Helmholz.—p. 215.

Relation of Homologous Serum Hepatitis to Prophylactic Injection of Human Blood Fractions: Study of 13,755 Cases with Injections. N. M. Greenstein, L. H. Barenberg and D. Steinberg.—p. 218.

*Tetanus Immunization: Ten Year Study. J. A. Bigler.—p. 226.

*Mental Achievement of Congenitally Hypothyroid Children: Follow-Up Study of 20 Cases. A. Topper.—p. 233.

Tetanus Immunization: A 10 Year Study.—There have been many reports on the immediate effectiveness of immunization against tetanus with tetanus toxoid, but there have been few reports on longer term immunity levels. The observations reported in this paper were made on 300 infants and children, most of whom were immunized between 1938 and 1940. During the intervening years, 1,363 titrations of the blood serum for tetanus antitoxin were made on 262 of these children. The results of these titrations indicate that a primary or basic immunization can be obtained with either two or three injections of tetanus toxoid. When two injections are used for basic immunization, protective levels are not always attained and a booster injection should always be given after an injury, no matter how short the interval. Detectable amounts of tetanus antitoxin were present in the blood serum of all immunized children tested up to 10 years later during the study. Protective levels of antitoxin were present after booster injections given up to 10 years after immunization. Protective levels were obtained with each of as many as five booster injections. The response to the booster injections was rapid, occurring within the first seven days. The greater the number of injections, the longer the protective levels were maintained. Until there are further reports on antitoxin levels over long intervals, although apparently protective levels are present, it would seem advisable to give a booster injection to an immunized person at the time of an injury from which tetanus might develop.

Mental Achievement of Congenitally Hypothyroid Children.—Twenty cretins, six boys and 14 girls, have been followed for one to 25 years. One of the children is believed to have juvenile hypothyroidism, acquired at the age of about 4 years. All the others have congenital hypothyroidism, or what is termed conveniently (if somewhat erroneously) "cretinism." Desiccated thyroid was used for all patients. The individual dosage varied from case to case and from time to time. Clinical response has been the best guide to adequate dosage. Psychiatric tests of the 20 cretins revealed that seven remained mentally defective despite adequate treatment. In an attempt to explain this, electroencephalographic studies were made on the seven cretins who had remained defective and on six who had reached a normal level of intelligence. Five of the seven who had remained defective showed electroencephalographic tracings that revealed "diffuse cerebral dysfunction." All the cretins who had reached a normal level of intelligence showed tracings that were entirely consistent with normal mentality. The author believes that when such studies are made in infancy, they can be of significant prognostic import, since no amount of thyroid can bring about normal mentality in the presence of cerebral dysfunction, whereas if the electroencephalogram shows a normally functioning brain, adequately pursued therapy can bring about normal mentality even in congenital hypothyroidism. He concludes that the poor mental results obtained in some children with congenital hypothyroidism are caused by such factors as the degree of deficiency of the gland, the innate mental endowment and—what seems to be the most significant factor—impairment of the brain, existing in the cretin either as a primary amentia or as a developmental result of lack of thyroid stimulation.

A.M.A. Arch. Indust. Hyg. & Occup. Med., Chicago

3:121-226 (Feb.) 1951

Rapid X-Ray Diffraction Method for Determination of Quartz in Industrial Dusts. L. L. Schmelzer.—p. 121.

Significance of Exercise Tolerance Test. W. F. Renner.—p. 129.

Study of Nitrogen Oxide Concentrations During Arc Welding. L. Silverman and S. I. Husain.—p. 135.

SYMPOSIUM ON THE DYNAMICS OF INDUSTRIAL MEDICINE

Presentation of Unidentified Occupational Case History. R. J. Hasterlik. —p. 147.

Surveying the Plant. D. J. Lauer.—p. 150.

Studying the Environment. F. E. Adley.—p. 153.

Chemical Analysis. F. R. Holden.—p. 159.

Maximum Allowable Concentrations. H. H. Hudson.—p. 161.

Medical Control. R. A. Kehoe.—p. 165.

Engineering Control of Occupational Health Hazard. B. F. Postman. —p. 169.

SYMPOSIUM ON HOW INDUSTRIAL MEDICINE CAN MEET THE NEEDS OF THE AMERICAN WORKER

Viewpoint of Personnel Administrator. H. S. Hall.—p 173.

Viewpoint of Sociologist. R. Bendix.—p. 177.

Viewpoint of Psychiatrist. K. M. Bowman.—p. 181.

Viewpoint of Physician in Industry. H. H. Kessler.—p. 185.

Viewpoint of Union. H. Read.—p. 188.

Viewpoint of Religion. R. Henry.—p. 192.

A.M.A. Archives of Pathology, Chicago

51:137-248 (Feb.) 1951

Effect of Experimental Shock Induced by Clostridium Perfringens Toxin on Kidneys of Dogs. M. Berg, S. A. Levinson and K. J. Wang.—p. 137.

Endophlebohypertrophy and Phlebosclerosis: I. Popliteal Vein. M. Lev and O. Saphir.—p. 154.

Acute Bacterial Endocarditis Due to Pseudomonas Aeruginosa: Report of Case. F. C. Coller and D. J. Dyer.—p. 179.

Sympathetic Ganglions of Hypertensive Patients. R. C. Truex.—p. 186.

Postnatal Structural Changes in Intrapulmonary Arteries and Arterioles. W. H. Civin and J. E. Edwards.—p. 192.

*Quantitative Exfoliative Cytology: Differential Counting of Cervical Smears Stained for Glycogen in Cases of Pregnant and Nonpregnant Women. A. G. Foraker and D. L. Brawner.—p. 201.

Aberrant Pyloric Glands in Regional Ileitis. A. F. Liber.—p. 205.

*Variants of Platelet Thrombosis Syndrome and Their Relationship to Disseminated Lupus. P. M. Beigelman.—p. 213.

Lipids of Normal and Atherosclerotic Aortas: Chemical Study. R. C. Buck and R. J. Rossiter.—p. 224.

Cervical Smears from Pregnant and Nonpregnant Women.—This communication records an attempt to apply quantitative methods to the study of exfoliative cells, whereas in the past major emphasis has been on qualitative identification of specific cell types. It has been known for some time that gylcogen is increased in certain cells of the female genital tract in pregnancy. Quantitative studies of this change were made from smears obtained by superficial cervical scrapings from 18 pregnant women

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Titles marked with an asterisk (*) are abstracted.

(the period of gestation ranging from two to seven months) and from 15 nonpregnant women. Six smears were made for each patient and fixed in alcohol-ether. As a control procedure, three of these were digested with saliva before the staining, because certain acid mucopolysaccharides, especially mucus, give a false positive reaction with glycogen stains. All slides were stained by a modification of the periodic acid routine. To make the procedure more quantitative, the authors exposed one each of the digested and undigested smears to the Schiff reagent for 2, 5 and 10 minutes rather than the 15 minutes indicated by Lillie. By a count of the cells staining at each of these intervals, the authors felt that they could detect finer gradations in the amount of glycogen present than by determining the intensity of the staining reaction in a single smear. All counts were done without knowledge of the patient's status. This procedure differentiated the pregnant from the nonpregnant patients with accuracy up to 93.3 per cent, varying with methods of computation. It is suggested that this technique may offer a quantitative approach through exfoliative cytology to studies of certain biologic manifestations. Differential counts of glycogen-containing cells through various stages or disorders of pregnancy, in tumors, endocrine changes, the menopause and through varied treatment regimens might record objectively many biologic changes not now quantitatively studied. The application of this technique to other histochemical methods and to exfoliated cells from various sources is in progress.

Variants of Platelet Thrombosis Syndrome.—A disease characterized by acute purpura hemorrhagica, low grade fever, moderate icterus, thrombopenia, anemia, terminal cerebral manifestations and rapid, inexorable death, with widespread platelet thromboses of capillaries and precapillary arterioles was described in 1936. The present report describes two cases in which not only features of platelet thrombosis but features of other conditions were encountered. These observations raised the question of whether platelet thrombosis could be related to allergic diseases in general and to lupus erythematosus in particular. The first patient had the characteristics of the platelet thrombosis syndrome terminally. Necropsy revealed many platelet thrombi in the myocardium, which would confirm the clinical impression. However, the focal glomerular necroses and the splenic perifollicular rings suggested a type of tissue change more like that of lupus erythematosus. The icterus usually associated with generalized platelet thrombosis was not evident, but the abnormal albumin-globulin ratio and the elevated thymol turbidity indicate possible hepatic dysfunction. The 10 year history of arthralgia, angina-like attacks, malaise and mild anemia may have been a prodromal smouldering of the disease process. In the second patient chills, fever and thrombopenia in June 1948 suggested the platelet thrombosis syndrome. This diagnosis seemed to be confirmed by the presence of typical platelet thrombi in a biopsy specimen of the skin. The two year duration of the illness and the mildness of the nonprogressive anemia were unusual. Twelve days after platelet thrombosis was noted in the cutaneous specimen, the urine contained a "telescopic sediment" suggestive of periarteritis or lupus erythematosus. In April 1949 autopsy revealed verrucose endocarditis and glomerular sclerosis—suggestive of a disease resembling lupus erythematosus. It appears likely that platelet thromboses constituted the principal early manifestations of the disease and that lupus erythematosus terminated the illness. The author suggests that the platelet thrombosis syndrome be placed in the same category as the so-called collagen diseases, such as periarteritis nodosa, lupus erythematosus and dermatomyositis.

Alabama State Medical Assn. Journal, Montgomery

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Comparison of Newer Mercurial Diuretics. W. J. Atkinson Jr.—p. 229.
Experiences in General Surgery at Modern 350 Bed General Hospital in Alabama. R. A. Hamrick.—p. 233.
Clinical Symposium on Present Day Use of Antibacterial and Chemotherapeutic Agents. Part II: Drug of Choice. A. E. Hussar and H. L. Holley.—p. 242.
Dangers of Tie and Drop Method of Appendectomy. J. R. Hood.—p. 251.

American Journal of Medical Sciences, Philadelphia

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*Pneumococcal Pneumonia at Jefferson Hospital. C. T. de Beradinis and A. M. de Andino Jr.—p. 1.
*Treatment of Friedländer's Pneumonia. R. J. Gill.—p. 5.
Observations of Normal and Abnormal Human Intestinal Motor Function. E. L. Posey Jr. and J. A. Bargen.—p. 10.
*Use of Potassium Chloride in Pre-Operative Treatment of Pyloric Stenosis in Infants. F. M. Mateer, L. Greenman, A. C. Austin and Others.—p. 21.
Liver Biopsy: Correlation With Clinical and Biochemical Observations. J. H. Moyer and O. A. Wurl.—p. 28.
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Treatment Abuses in Allergy Practice. L. Tuft.—p. 51.
Significance of Arterial Blood Sugar in Spontaneous Hypoglycemia. M. Fabrykant and B. I. Ashe.—p. 61.
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Coexistence of Cirrhosis of Liver and Glomerulonephritis: Report of 14 Cases. A. J. Patek Jr., D. Seegal and M. Bevans.—p. 77.
Localized Paroxysmal Hyperhidrosis. S. M. Mellinkoff.—p. 86.
Coccidiomycosis: A Review. J. Schwarz and J. Muth.—p. 89.
Present Status of ACTH and Cortisone Therapy from Psychiatric Viewpoint. F. G. Ebaugh.—p. 108.

Pneumococcic Pneumonia.—Two groups of patients with pneumococcic pneumonia who were admitted to Jefferson Hospital in Philadelphia were studied. The first group consisted of 75 patients admitted during the period of 1937 to 1940. The second group consisted of 91 patients admitted during the period of 1946 to 1949. Comparison of the two groups showed that there was no decrease in the rate of admission of patients with pneumococcic pneumonia. In the years 1946 to 1949 there was an increase in incidence of the disease in higher age groups, with an increase in mean age from 39.9 years to 46.6 years. There was also an increase in the occurrence of pneumococci of type 4 and above with a corresponding fall in lower numbered types, especially type 1. Typical physical observations of lobar consolidation were made in 63 patients of the first group as compared with 35 in the second group. The percentage of septic complications fell from 16 to 7.7 per cent, probably as the result of antibiotic therapy. The over-all mortality rate fell from 21.3 to 6.59 per cent. The majority of the patients who died had the complicating features of chronic degenerative disease, which influenced the mortality rate unfavorably in patients aged over 40.

Treatment of Friedländer's Pneumonia.—Gill reports the occurrence of Friedländer's pneumonia in 25 of 2,000 patients with pneumonias of all kinds, an incidence of 1.2 per cent. Of the 25 patients, 15 had acute primary Friedländer's pneumonia, seven had acute mixed or secondary Friedländer's infections and three had chronic Friedländer's pneumonia. Twenty-one patients were men, with an average age of 47. The diagnosis was made bacteriologically and before death in 17 cases and was post mortem in five. Of the 25 patients, 10 died, a mortality rate of 40 per cent. Of the 15 patients with acute primary pneumonia, eight died, a mortality rate of 53 per cent. The mortality rate in the seven mixed and secondary cases was 30 per cent. None of the three patients with chronic pneumonia and none of the female patients died. Of 11 patients given sulfonamide compounds, three died. Of the five receiving only penicillin all died. Of the four given combined treatment with sulfonamide compounds, streptomycin and penicillin, all recovered. The two that received no drug therapy died. Specific therapy has brought about a marked decrease in the mortality rate in Friedländer's pneumonia, which was formerly 75 to 82 per cent. The improved results must be credited largely to sulfonamide compounds and in smaller measure to streptomycin. Penicillin used alone was of no value in the treatment of these patients. It may even do harm. Rapid and accurate diagnosis and early institution of the correct specific drugs are fundamental to successful results in treating Friedländer's pneumonia. Positive blood culture results indicate poor prognosis, and negative results indicate relatively good prognosis. The use of specific drug therapy for acute Friedländer's pneumonia did not result in an increased incidence of chronic infection.

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Potassium Chloride in Pyloric Stenosis in Infants.—During the preoperative period, six infants, in the second to eleventh week of life, with repeated vomiting due to pyloric stenosis, were given intravenously a 35 milliequivalents per liter solution of potassium chloride in 5 per cent dextrose, resulting in intakes of potassium as high as 46 milliequivalents. Four of the six infants received plasma or whole blood as well. The remainder of the intake during the preoperative period was limited to parenterally administered solutions of dextrose, 5 or 10 per cent, and sodium chloride, 0.9 per cent. Measurement of external and internal exchanges following these injections revealed a retention of administered potassium, chiefly in the cells, and of sodium and chloride in the extracellular fluid. These changes represent a restoration of body fluid composition to normal, and their acceleration is highly desirable. The administration of potassium chloride solution permits the replenishment of extracellular and intracellular potassium and provides the chloride ion in excess of sodium, which is desirable in view of the greater losses of chloride than of sodium in gastric secretions. The authors recommend slow administration of a relatively dilute solution of potassium following the establishment of adequate renal function. This precaution is dictated by the known toxic effects of increased extracellular concentrations of potassium, which include electrocardiographic alterations and possible skin and neurologic manifestations. There are several premixed solutions that take many of these factors into account and therefore meet the needs in a good many clinical situations. Individual prescriptions that permit control of the sequence as well as the quantity of replacement therapy are to be preferred.

American Journal of Physiology, Baltimore

163:469-778 (Dec.) 1950. **Partial Index**

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Effects of Massive Transfusion and Hemorrhage on Blood Pressure and Fluid Shifts. A. C. Guyton, J. E. Lindley, R. N. Touchstone and others.—p. 529.

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Action of Tetraethylammonium on Pressor Response to Asphyxia. W. A. Freyburger, C. C. Gruhzit, B. R. Rennick and G. K. Moe.—p. 554.

Circulatory Transfer of P^{32} to Skeletal Muscles Under Various Experimental Conditions. D. L. Gilbert, C. D. Janney and H. M. Hines. —p. 575.

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Biochemical, Cellular, and Bacteriologic Changes in Thoracic Duct Lymph of Dogs Exposed to Total Body Irradiation. C. S. Brown, E. Hardenbergh and J. L. Tullis.—p. 668.

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Psychomotor Epilepsy as Manifestation of Subdural Hematoma. S. Levin. —p. 501.

American Journal of Psychotherapy, New York

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Combined Approach to Study of Treatment of Disturbed Children: As Carried Out at the Institute of Child Psychology, in London, England. M. Lowenfeld.—p. 627.

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American Review of Tuberculosis, New York

63:1-120 (Jan.) 1951

Viomycin, a New Antibiotic Active Against Mycobacteria. A. C. Finlay, G. L. Hobby, F. Hochstein and others.—p. 1.

*Viomycin, a New Tuberculostatic Antibiotic. Q. R. Bartz, J. Ehrlich, J. D. Mold and others.—p. 4.

Antimicrobial Activity of Streptomyces Floridae and of Viomycin. J. Ehrlich, R. M. Smith, M. A. Penner and others.—p. 7.

Activity of Viomycin Against Mycobacterium Tuberculosis and Other Micro-Organisms in Vitro and in Vivo. G. L. Hobby, T. F. Lenert, M. Donikian and D. Pikula.—p. 17.

Effect of Viomycin in Vitro and in Vivo on Mycobacterium Tuberculosis. G. P. Youmans and A. S. Youmans.—p. 25.

Viomycin in Experimental Tuberculosis. W. Steenken Jr. and E. Wolinsky.—p. 30.

Effect of Viomycin in Tuberculosis of Guinea Pigs, Including in Vitro Effects Against Tubercle Bacilli Resistant to Certain Drugs. A. G. Karlson and J. H. Gainer.—p. 36.

Viomycin: Acute and Chronic Toxicity in Experimental Animals. S. Y. P'an, T. V. Halley, J. C. Reilly and A. M. Pekich.—p. 44.

Toxicity of Viomycin in Humans. C. A. Werner, R. Tompsett, C. Muschenheim and W. McDermott.—p. 49.

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Right-Sided Spontaneous Pneumothorax Complicating Therapeutic Pneumoperitoneum. J. Ross and J. E. Farber.—p. 67.

Value of Simple Ventilatory Function Tests in Evaluating Patients for Thoracoplasty. G. W. Thomas and J. D. Steele.—p. 76.

Permanence of So-Called Temporary Phrenic Nerve Paralysis. H. H. Seiler and J. D. Murphy.—p. 81.

Antigenic Activity of Fresh, Frozen, and Dry BCG Vaccine. K. Birkhaug. —p. 85.

Pathogenicity of Streptomycin-Dependent Tubercle Bacilli. R. J. Vanderlinde and D. Yegian.—p. 96.

Studies in Metabolism of Tubercle Bacillus: II. Production of Pharmacologically Active Metabolite, with Note on Utilization of Histidine. M. I. Smith, Y. T. Chang and E. W. Emmart.—p. 100.

Hyaluronidase in Tuberculosis. H. J. Corper and M. L. Cohn.—p. 108.

Viomycin, a New Tuberculostatic Antibiotic.—Several isolates of a raspberry-colored to violet-colored actinomycete have been obtained from soil samples and investigated because of their antagonism for mycobacteria. The name Streptomyces floridae has been proposed because the culture first studied was isolated from a Florida soil sample. In cross streak tests on agar plates this isolate inhibited the growth of Mycobacterium tuberculosis ATCC 607, M. tuberculosis var. hominis H37Rv and the streptomycin-resistant H37RvR and exhibited lesser activity against Escherichia coli, Klebsiella pneumoniae, Micrococcus pyogenes var. aureus, Shigella sonnei, Candida albicans and Trichophyton gypseum. When Streptomyces floridae was grown in liquid media, filtrates of these aerobic cultures exhibited in vitro activity against the bacteria listed and also against Bacillus subtilis, Brucella suis, Salmonella schottmuelleri, Streptococcus viridans and Trichomonas foetus. The antibiotic was isolated and purified. The authors describe the physical characteristics of the sulfate and of the hydrochloride of this antibiotic, and they present a list of organisms against which viomycin demonstrated antibacterial activity in vitro. They also found that the highly purified antibiotic is well tolerated by laboratory animals. Single intravenous injections of 250 mg. of the hydrated sulfate per kilogram of body weight and subcutaneous injections of 1,000 mg. per kilogram caused no fatalities in mice. Repeated subcutaneous injections of 300 mg. per kilogram twice daily for two weeks were well tolerated by mice. That the antibiotic is also active on tubercle bacilli in vivo is indicated by its great protective action against experimental tuberculosis in mice.

Canadian Medical Association Journal, Montreal

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Some Effects of Intravenous Injections of Saccharated Iron Oxide on Serum Iron and Unsaturated Iron Binding Capacity. D. G. Cameron, E. H. Bensley and P. Wood.—p. 30.
Surital Sodium: Clinical Impressions of New Thiobarbiturate for Intravenous Anaesthesia. E. A. Gain, M. Yates, Z. Hoar and E. H. Watts. —p. 32.
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Cortisone in Treatment of Leukaemia. C. Weder and A. Becker.—p. 39.
*Treatment of Leukaemia with Cortisone. R. E. Bell and R. K. Thomson. —p. 43.
*Place of Splanchnicectomy in Treatment of Hypertension. J. A. Evans. —p. 47.
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Diverticula of Small Bowel and Their Surgical Significance. S. V. Railton. —p. 55.
Early Symptoms of Tetanus with Review of 22 Cases. E. M. Fountain. —p. 58.
Acute Abdominal Pain (Critical Analysis of 200 Patients). D. Mcdonald. —p. 60.
Corrected Transposition in Heart of 10 Months' Infant. R. F. Shaner and J. W. Adams.—p. 64.

Treatment of Leukemia with Cortisone.—Bell and Thomson used cortisone in the treatment of five patients, three children and two adults, with leukemia of various types. Two patients had acute lymphatic, one acute monocytic and two acute undifferentiated leukemia. The response to treatment varied greatly. One patient with acute lymphatic leukemia had a dramatic temporary remission. The other patient with this type of leukemia showed no significant change other than a decrease in the amount of lymphatic tissue. The patient with acute monocytic leukemia was given combined treatment with cortisone and the folic acid antagonist 4-aminopteroylglutamic acid (aminopterin). The response was negligible. The two patients with acute undifferentiated leukemia also responded poorly to cortisone. A failure of the 17-ketosteroid excretion to rise with large doses of cortisone was observed in one case. Results suggest that cortisone is of some benefit in some cases of acute lymphatic leukemia, but the remission produced is only temporary. Cortisone would appear to be of little value and perhaps be contraindicated in acute monocytic leukemia and in some cases of undifferentiated leukemia. An accurate diagnosis of the type of leukemia should be made if at all possible before treatment is instituted.

Splanchnicectomy in Hypertension.—Since 1945 all sympathectomies for hypertension at the Lahey Clinic in Boston have been of the high thoracolumbar type with resection being carried out to the level of the fourth thoracic segment. The main effect of the operation has been on orthostatic blood pressure. Sixty nine per cent of the patients with groups 1 and 2 fundi, and 48.8 per cent with group 3 fundi had a good or excellent drop in blood pressure in the standing position. Hemorrhagic exudative fundi in group 3 had showed satisfactory reversion to lower groups, 36 of 44 showing loss of hemorrhage and exudate. Five out of eight patients in group 4 had complete cure of choked disks, hemorrhage and exudate; three patients who were almost blind left the hospital able to read. The reduction in heart size was one of the most gratifying results from splanchnicectomy, with 20 of 31 preoperatively enlarged hearts reverting to normal size three to six months after operation. Of 50 patients who had abnormal electrocardiograms before operation, 21 had improved electrocardiographic tracings postoperatively, while in 28 there was no change and in one there was more damage than previously. In 15 cases of anginal pain, 11 patients had relief. In a previous series of resections below the fourth thoracic level one patient out of eight had relief from anginal pain. Since these figures were computed, the so-called "anginal pathway" (first to the fourth thoracic ganglions) has been resected in 10 cases of severe anginal pain with hypertension, and in all there was satisfactory relief of pain. Of 24 patients who had high thoracolumbar sympathectomy more than three years ago for grade 3 hypertension there are 19 survivors. Of eight patients who had sympathectomy four years ago there are six survivors. The author considers this type of operation with its prolonged uncomfortable convalescence as a prophylactic operation for relatively benign hypertension but urges it on patients of less than 50 years of age with spastic exudative and hemorrhagic retinal arteriolar changes, moderate cardiac damage, signs of early nephrosclerosis and labile blood pressure.

Delaware State Medical Journal, Wilmington

23:1-26 (Jan.) 1951

Testicular Tumors: Report of Two Cases. P. W. Huntington Jr. and A. C. Dunbar.—p. 1.
Meig's Syndrome: Case Report. I. Slovin and J. Nealon.—p. 8.
Cortisone and ACTH in Treatment of Diseases of Eye. R. L. Dickey. —p. 11.
Intestinal Obstruction Complicating Third Trimester of Pregnancy. C. R. Green.—p. 14.

Florida Medical Association Journal, Jacksonville

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Subdiaphragmatic Abscess with Special Reference to Its Roentgen Ray Visualization. F. H. Bowen and A. L. Hardie Jr.—p. 423.
Viral Hepatitis: Present Concept and Some of Its Problems. H. Fuller. —p. 430.
Principles of Plastic Surgery. G. W. Robertson.—p. 433.
Planned Parenthood Program. D. F. Milan.—p. 435.
Pneumoperitoneum in Treatment of Pulmonary Tuberculosis. J. A. Barger Jr. and P. Felos.—p. 439.

Gastroenterology, Baltimore

16:635-824 (Dec.) 1950

The Pancreas: Contributions of Clinical Interest in 1949. R. Elmans and R. E. Keating.—p. 635.
Serum Alkaline Phosphatase in Liver Disease: Concept of Its Significance. J. O. Burke.—p. 660.
*Adenoma of Rectum and Sigmoid Colon: Incidence Revealed by Proctosigmoidoscopic Examination of Group of Patients Free of Complaints Referable to Colon and Rectum. E. W. Hauch, L. A. Buie, J. A. Bargen and L. A. Smith.—p. 669.
*Clinical and Roentgenographic Observations on Constipation in Patients with Peptic Ulcer. A. Littman and A. C. Ivy.—p. 674.
Post-Bulbar Duodenal Obstruction in Carcinoma of Pancreas. R. H. Marshak, D. A. Dreiling and A. I. Friedman.—p. 680.
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Study of Alleged Deficiency of Gastric Mucin in Stomach of Humans with Peptic Ulcer. G. B. J. Glass and L. J. Boyd.—p. 697.
*Emergency Medical Treatment in Bleeding Esophageal Varices. A. Lorant. —p. 716.
Partial Gastric Resection for Peptic Ulcer of Esophagus: Case Report, Review of Literature, Remarks on Pathogenesis and Treatment. A. Cornell, A. Winkelstein and R. Colp.—p. 720.
Serum Calcium in Acute Pancreatitis. W. F. Lipp and R. S. Hubbard. —p. 726.
Acid Reducing Mechanisms of Normal Human Duodenum and Observation on Duodenal Ulcer. C. M. Wilhelmj, A. Sachs, B. Slutzky and A. Barak.—p. 731.
Clinical Studies in Human Strongyloidiasis: I. Semeiology. C. A. Jones. —p. 743.
Amino Acid Excretion in Patients with Gastrointestinal Disease During Ingestion of Various Protein Supplements. A. L. Sheffner, J. B. Kirsner and W. L. Palmer.—p. 757.
A Permanent Gastrostomy. M. K. Barrett.—p. 764.

Adenoma of Rectum and Sigmoid.—At the Mayo Clinic proctosigmoidoscopic examinations were made on 2,161 patients from the gastrointestinal and general medical sections who on initial examination had no symptoms referable to the lower bowel, such as rectal bleeding, pain, and pruritus, diarrhea, hemorrhoids, lower abdominal cramps or any recent change of bowel habit. At the conclusion of the observation, a closer review of the records of these 2,161 patients revealed that only 1,919 were entirely free of such symptoms. The incidence of rectal and sigmoidal adenomas in the 1,919 patients was 8.1 per cent. Adenomas occurred about twice as frequently in males as in females and approximately twice as often in the older as in the younger group. There was a progressive rise in incidence of

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adenomas from the second to the eighth decades of life. Probably, roentgenologic studies of that portion of the sigmoid that could not be reached by sigmoidoscopy would have shown the incidence to be greater. The term adenoma is here applied to any excessive glandular growth, whether malignant or not. It is felt that nearly all such lesions, regardless of size and whether sessible or pedunculated, are potentially malignant. Proctosigmoidoscopic examinations should probably be performed on all patients (especially men) who are 45 years of age or older as a part of a routine physical examination. This study indicated that approximately 8 per cent of persons in the fifth decade harbor rectal or sigmoidal adenomas without evident symptoms. This threat of malignancy should be eradicated by fulguration of the adenoma or by some other efficient method.

Constipation in Patients with Peptic Ulcer.—Increased hardness of the stool, diminished frequency of bowel movements and increased difficulty in stool passage are the characteristics of the form of constipation seen in patients with peptic ulcer. Contributing causes are the low residue content of the ulcer diet and the hardening effect on the stools of the antacids commonly used; furthermore, ulcer disease itself is thought by some to be a cause of bowel dysfunction. Others have suggested that constipation is a simultaneous manifestation of the vegetative dysfunction that causes ulcer. To study the separate operation of the various factors the authors regulated therapy and diet. Interrogation at each visit was directed toward colon function. Thirty-one ulcer patients were observed on ambulatory treatment. In three cases the lesions were in the stomach, and in the others they were duodenal. During the observation period of up to 36 months, 79 per cent of patients had constipation, and in three fourths of them this symptom occurred only in association with ulcer recurrences and their treatment. The use of large amounts of calcium carbonate or aluminum hydroxide gel was the sole cause of constipation in 14 of the cases representing 61 per cent of the number having this complaint. In an additional 35 per cent medications were definitely contributory. Ulcer disease itself and low residue diets by themselves caused constipation in only a few cases. Magnesium oxide, psyllium hydrophilic mucilloid with dextrose (metamucil®) or an increase in dietary residue counteracted the constipation effectively. Roentgenograms were repeated 24 or 48 hours after routine x-ray examinations of the upper gastrointestinal tract. There was no correlation between the amounts and distribution of barium remaining and constipation, therapy or the presence of an ulcer niche.

Emergency Medical Treatment in Bleeding Esophageal Varices.—It is important to realize that bleeding from esophageal varices is of the venous type, whereas the ulcers of the gastrointestinal tract bleed either from the arteries or from the capillaries. This may explain why bed rest, administration of vitamin K and blood transfusions prove effective in bleeding ulcers but not in esophageal varices. After explaining the circulatory mechanisms involved in the production of esophageal varices, the author shows that the reversal of the direction of gravitation will diminish the bleeding from the varices. To reverse the force of gravitation the following methods are suggested: 1. Simple elevation of the foot of the bed by 10 inches. If this elevation does not give a satisfactory result, a higher elevation should be tried. 2. With the patient in prone position, 15 to 20 inch elevation of the pelvis. The author had the opportunity of applying these principles in patients with bleeding esophageal varices in whom treatment with isotonic sodium chloride solution, dextrose, protein hydrolysate (amigen), vitamin K and blood transfusions had not produced the desired results. In the first patient the effect was dramatic: three hours after elevation, the patient vomited 200 cc. of dark blood clots and following that the bleeding stopped completely and did not recur in the next 10 days. There was no need to study the effect of other methods on this patient. Encouraged by the good results, the author tried the postural treatment in five more patients with bleeding esophageal varices. The general impression was that following postural treatment the bleeding stopped immediately in five of the six patients. Five patients survived, and one died.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

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Oral and Fascial Cancer. B. G. Sarnat and I. Schour.—p. 41.
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Urinary Infections in Children. G. B. Logan.—p. 63.

Journal of Applied Physiology, Washington, D. C.

3:379-438 (Jan.) 1951

Effect of Prehydration on Response to Saline Infusion in Man. M. Ladd. —p. 379.
Permeability of Dura Mater to Epidural Procaine in Dogs. D. O. Rudin, K. Fremont-Smith and H. K. Beecher.—p. 388.
Direct Measurement of Renal Vessel Pressures Under Stress of Acceleration. S. W. Ames, S. Rosenfeld and C. F. Lombard.—p. 399.
*Strength and Endurance in Waking and Hypnotic States. E. S. Roush. —p. 404.
Immediate Effects of Shock Therapies, Epinephrine and ACTH on Blood Glutathione Level of Psychotic Patients. D. H. Henneman and M. D. Altschule.—p. 411.
Resuscitation of Dogs from Fresh Water Drowning. D. C. Fainer, C. G. Martin and A. C. Ivy.—p. 417.
Aerobic Oxygen Consumption and Alactic Debt in Muscular Work. F. M. Henry.—p. 427.

Strength and Endurance in Hypnosis.—There have been reports of superhuman physical acts performed under hypnosis. The purpose of these investigations was to determine whether physical performance can be increased in the hypnotic state or in the post-hypnotic state as compared to the waking state. Hypnosis was induced by the hand levitation technique. Strength and endurance of 20 subjects were measured in the waking, hypnotic and post-hypnotic states in three ways: by the arm dynamometer, the hand dynamometer and the hanging-by-hands test. When they were sufficiently well controlled and when they were instructed to disregard pain, the subjects showed increased performance in all three tests in the hypnotic state. There are indications that this increase probably results from removal of inhibitory influences during the hypnotic state.

Journal of Immunology, Baltimore

65:605-722 (Dec.) 1950

Growth of Neurotropic Viruses in Extraneural Tissues: II. MM Virus in Various Tissues of Hamsters and Mice. V. C. Chambers, W. M. Smith and C. A. Evans.—p. 605.
Quantitative Studies on Serologic Relationships of Fungi. S. B. Salvin. —p. 617.
Studies of Hemagglutinin of Hemophilus Pertussis. E. H. Thiele. —p. 627.
Antibody Production in Rabbit's Cornea. R. Thompson and H. Olson. —p. 633.
Treatment with Chloramphenicol, Aureomycin, and Terramycin of Pneumonia of Mice Caused by Feline Pneumonitis Virus. Y. Kneeland Jr. and K. M. Price.—p. 653.
Quantitative Studies of Complement-Fixation: V. Estimation of Complement-Fixing Potency of Immune Sera and Its Relation to Antibody-Nitrogen Content. A. L. Wallace, A. G. Osler and M. M. Mayer.—p. 661.
In Vivo Antibiotic Production by Escherichia Coli. S. P. Halbert and L. S. Swick.—p. 675.
Enhancement of Anaphylaxis in Albino Mice with Aid of Adjuvants. A. H. Wheeler, E. M. Brandon and H. Petrenco.—p. 687.
Recovery of Two Distinct Haemagglutinins of Vaccinia Virus. A. L. Gillen, M. M. Burr and F. P. Nagler.—p. 701.
Agglutinin Nitrogen in Staphylococcus Antisera. M. J. Kahnke.—p. 707.
Study of an American Negro Family with Rare Rh Genotype r^y r (CdE/cde). S. Phansomboon and O. J. Pollak.—p. 711.

66:1-136 (Jan.) 1951. **Partial Index**

Failure of Hyaluronidase to Influence Growth of PR8 Virus in Chick Embryos. L. B. Fastier.—p. 1.
Influenza Virus Receptor and Blood Group Antigens of Human Erythrocyte Stroma. C. Howe.—p. 9.
Studies on Use of Enzyme-Treated Red Cells in Tests for Rh Sensitization. A. S. Wiener and L. Katz.—p. 51.
Study of Reaction Between Human Serum Albumin and Its Homologous Equine Antibody Through Medium of Light Scattering. D. Gitlin and H. Edelhoch.—p. 67.
Effects of Gliotoxin and Other Sulfur-Containing Compounds on Tumor Cells in Vitro: With Observations on Mechanism of Action of Gliotoxin. J. W. Mason and J. G. Kidd.—p. 99.
Serological Reactions in Rheumatoid Arthritis: III. Increased Agglutination of Sensitized Sheep Erythrocytes in Presence of Normal Animal Sera. R. M. Pike, S. E. Sulkin and H. C. Coggeshall.—p. 107.
Indirect Complement Fixation, Hemagglutination and Conglutinating Complement Absorption Tests for Viruses of Psittacosis-Lymphogranuloma Venereum Group. R. M. Hilleman, D. A. Haig and R. J. Helmold.—p. 115.

Journal of the Mount Sinai Hospital, New York

17:269-350 (Jan.-Feb.) 1951

Research on Cardiovascular Disease and Congenital Heart Disease at the Mount Sinai Hospital. S. Jarcho.—p. 269.
Technique of Cardiac Catheterization and Angiocardiography as Employed at the Mount Sinai Hospital. M. L. Sussman, A. J. Gordon, S. A. Brahms and others.—p. 272.
Electrocardiographic Abnormalities Induced by Cardiac Catheterization. R. P. Lasser, R. Borun, A. J. Gordon and F. H. King.—p. 295.
Further Experiences with Microplethysmography in Study of Congenital Heart Disease. R. S. Megibow and S. Feitelberg.—p. 303.
Aortic Septal Defect Simulating Patent Ductus Arteriosus. F. H. King, A. Gordon, S. Brahams and others.—p. 310.
Isolated Interventricular Septal Defect with Dilatation of Pulmonary Artery, an Entity. I. G. Kroop, E. R. Borun, R. P. Lasser and others.—p. 317.
Uncomplicated Pulmonary Stenosis. B. M. Schwartz, A. J. Gordon, S. A. Brahams and F. H. King.—p. 323.
Tricuspid Atresia with Transposition of Great Vessels: Successfully Treated by Surgery. S. Blumenthal, S. Brahams and M. L. Sussman.—p. 328.
Aberrant Insertion of Pulmonic Veins. A. Grishman, S. A. Brahams, A. Gordon and F. H. King.—p. 336.

Journal of Neurophysiology, Springfield, Ill.

14:1-82 (Jan.) 1951. **Partial Index**

Dendritic Potential of Cortical Neurons Produced by Direct Electrical Stimulation of Cerebral Cortex. Hsiang-Tung Chang.—p. 1.
Function of Medullated Small-Nerve Fibers in Mammalian Ventral Roots: Efferent Muscle Spindle Innervation. S. W. Kuffler, C. C. Hunt and J. P. Quilliam.—p. 29.
Role of Acetylcholine in Nerve Activity. A. De Roetth Jr.—p. 55.
Limitations of Method of Strychnine Neuronography. B. Frankenhaeuser.—p. 73.

Memphis Medical Journal

26:1-18 (Jan.) 1951

Surgical Treatment of Facial Paralysis. B. W. Cannon.—p. 3.
*Arterial Transfusion: Its Clinical Application. W. E. French.—p. 5.
Surgical Significance of Intestinal Parasites. R. M. Miles.—p. 6.
Preoperative and Postoperative Management for Cleft Lip and Cleft Palate. J. A. Danciger.—p. 14.

Arterial Transfusion.—It has been shown experimentally that recovery from profound shock can be brought about in 75 per cent of cases by the use of intra-arterial transfusions and in only 25 per cent by the use of intravenous transfusions. In addition, results are obtained four times as rapidly with intra-arterial transfusions. Elaborate equipment is not necessary. Three way stopcocks can be attached to the tubing of an ordinary transfusion set and the blood pumped into the radial artery by means of a 50 cc. syringe. The author describes the results obtained by this method in two patients. The first, a 34 year old woman, was admitted to the hospital in profound shock with a ruptured ectopic pregnancy. Intravenous infusion of plasma produced no change in pulse or blood pressure, and so an intra-arterial blood transfusion was started. After 500 cc. of blood had been given in 10 minutes, the blood pressure rose to 110/80. Continuation of the intra-arterial transfusion at a slower rate maintained this blood pressure and permitted life-saving surgery. The second patient was a 26 year old man in profound shock because of profuse bleeding from a shotgun wound in the right femoral triangle. After the administration of 500 cc. of blood intravenously failed to produce any change in pulse or blood pressure, intra-arterial transfusion was started. In eight minutes the patient's blood pressure rose to 104/70 and it was possible to perform definitive surgery. In both of these cases intra-arterial transfusion was probably life saving.

New Jersey Medical Society Journal, Trenton

48:1-44 (Jan.) 1951

Short History of Spectacles. B. L. Gordon.—p. 3.
Congenital Heart Disease: I. Clinical Considerations. D. F. Downing, N. A. Antonius, H. A. Murray and W. Rumsey.—p. 8.
Diuresis in Congestive Heart Failure. C. M. Leevy and T. J. White.—p. 12.
Painless Acute Myocardial Infarction: Report of Case with Early Electrocardiographic Changes. M. Notkin.—p. 18.
Bronchoscopy in Allergic Diseases of Chest. T. H. McGlade.—p. 22.

New York State Journal of Medicine, New York

51:169-296 (Jan. 15) 1951

*Hyaluronidase in Pediatrics. J. Schwartzman.—p. 215.
PANEL DISCUSSION: PRESENT STATUS OF THE SULFONAMIDES AND ANTIBIOTICS IN PEDIATRIC PRACTICE
Principles of Sulfonamide and Antibiotic Therapy. J. M. Ruesegger.—p. 222.
Present Status of Sulfonamide Therapy in Pediatrics. A. E. Fischer.—p. 225.
Present Status of Penicillin and Streptomycin Therapy in Pediatrics. H. C. Soule.—p. 228.
Evaluation of Aureomycin, Chloromycetin, and Other Newer Antibiotics. S. Karelitz.—p. 234.
Medical Problems in Atomic Warfare. J. P. Cooney.—p. 239.
Subclinical Mineral Oil Pneumonitis. L. Schneider.—p. 245.
Duodenal Loop Triad Syndrome. W. Snow and J. A. Marks.—p. 252.
Headaches and Their Treatment. G. S. King.—p. 255.
Premature Separation of Normally Implanted Placenta: Ten-Year Analysis at Queens General Hospital. G. Schaefer and F. Carpenter.—p. 260.
Ophthalmoscope for Examination of Skin Lesions. M. B. Wallach and S. Schmones.—p. 262.

Hyaluronidase in Pediatrics.—The enzyme hyaluronidase is capable of enhancing the absorption of fluids from the tissues. Schwartzman used it to facilitate hypodermoclysis in over 200 cases, and he now uses it routinely in all clyses. After the patient has been proved nonsensitive by a skin test, ordinary hypodermic needles are inserted into the sites selected (usually the outer aspect of the thighs, the interscapular regions or the anterior abdominal wall, with each needle being directed laterally). The clysis is started, and 5 to 10 cc. of the fluid are permitted to flow through each side. Then 500 viscosity units (which have been dissolved in 1 cc. of sterile, distilled water to make an isotonic solution) are injected into the lumen of the rubber tubing about 1 inch from its junction with the needle. Following this, the clysis is permitted to run freely at the rate desired—150 to 200 cc. per kilogram of body weight usually being administered per 24 hours. In pressure clysis of small amounts of fluids or drugs, the enzyme can be added to the solution. Once the hyaluronidase is injected, the same area can be used effectively for about three days; after that, its effect diminishes rapidly. Hyaluronidase has been helpful in clyses, in hastening the administration of drugs given subcutaneously, in treatment of sinus conditions with penicillin, in intramuscular pyelography and in local anesthesia. It is hindered in its action by salicylates. Possible complications and causes of failure are cited. The advantages of the use of hyaluronidase are that no intricate set-up or experienced personnel is needed. It can be used at home, in the field or in an ambulance, if necessary. The flow can be adjusted to suit the occasion, and the administration can be discontinued without any concern about clots obstructing the needle. There is no danger of emboli. The sensitivity rate is very low, and toxicity is negligible. It is five to 14 times more effective than ordinary clysis, and it decreases the duration and intensity of pain. It is especially useful in cases in which intravenous administration is impractical, difficult or inadvisable because of the caliber, position or condition of the patient's veins.

Quarterly J. Studies Alcohol, New Haven, Conn.

11:527-724 (Dec.) 1950. **Partial Index**

Study of Rate of Metabolism of Ethyl Alcohol: With Special Reference to Certain Factors Reported as Influencing This Rate. T. A. Loomis.—p. 527.
Treatment of Alcoholism with Tetraethylthiuram Disulfide: With Observations on Effects of Group Reaction Test Witnessing. M. Crahan.—p. 538.
Personality Traits and the Alcoholic: Critique of Existing Studies. E. H. Sutherland, H. G. Schroeder and C. L. Tordella.—p. 547.
Alcoholism in Industry. J. L. Norris.—p. 562.

Southwestern Medicine, El Paso, Texas

32:1-36 (Jan.) 1951

Carcinoma of Lung. O. C. Brantigan.—p. 12.
Carcinoma of Lung. J. W. Gale.—p. 17.
Role of Laboratory in Diagnosis of Early Bronchogenic Carcinoma. M. S. Hart.—p. 21.

32:37-72 (Feb.) 1951

Self Help in Reductions. S. P. Rogers.—p. 49.
Prevention of Orthopaedic Crippling in Children. W. L. Minear.—p. 51.
Simple Method of Holding Chest Electrodes. R. D. Haire Jr.—p. 55.

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British Heart Journal, London

13:1-128 (Jan.) 1951

Right Ventricular Hypertrophy in Pneumoconiosis of Coalminers. A. J. Thomas.—p. 1.
Q-T Interval in Rheumatic Disease in Children. L. M. Taran and N. Szilagyi.—p. 10.
Electrocardiographic Patterns in Slight Coronary Attacks. C. Papp and K. S. Smith.—p. 17.
Tuberous Xanthomatosis. D. Leys.—p. 32.
Ageing of Cardiac Infarcts, and Its Influence on Cardiac Rupture. L. Lodge-Patch.—p. 37.
Clinical Measurement of Electrical Resistance of Patient with Amplifier Type of Electrocardiograph. P. Jeanneret.—p. 43.
General Anaesthesia and Cardiac Inhibition. M. Johnstone.—p. 47.
Theophylline-Ethylenediamine in Measurement of Blood Circulation-Time. D. N. Ross.—p. 56.
Postural Hypotension: Localization of Lesion. D. Verel.—p. 61.
Peripheral Gangrene in Myocardial Infarction. W. G. A. Swan and C. B. Henderson.—p. 68.
Paroxysmal Nodal Tachycardia with Retrograde Heart Block. J. A. Cosh. —p. 74.
Fluorescein Test of Circulation Time in Peripheral Vascular Disease. A. G. MacGregor and E. J. Wayne.—p. 80.
Unipolar Electrocardiography in Pulmonary Stenosis. R. M. Marquis. —p. 89.

British Medical Journal, London

1:51-104 (Jan. 13) 1951

Further Study of Teeth of 5-Year-Old Children in Residential Homes and Day Schools. M. Mellanby and H. Mellanby.—p. 51.
Posterior Gastro-Enterostomy in Peptic Ulcer: Long-Term Results. D. H. Clark.—p. 57.
Iron Encephalopathy. C. A. Birch and M. Till.—p. 62.
*Methoin in Treatment of Epilepsy. D. P. Jones.—p. 64.
Tuberculosis in Kenya. W. S. Haynes.—p. 67.
Suppurative Thrombophlebitis Treated with Aureomycin. D. M. Jackson. —p. 72.
*Strangulated Spigelian Hernia. D. Watson and B. Scotter.—p. 74.

1:105-150 (Jan. 20) 1951

Hormones of Sympathetic Nervous System and Adrenal Medulla. U. S. von Euler.—p. 105.
Agglutinin Anti-S in Human Serum. H. I. Coombs, E. W. Ikin, A. E. Mourant and G. Plaut.—p. 109.
Effect of Hexamethonium Bromide on Stomach. A. H. Douthwaite and M. G. Thorne.—p. 111.
Addison's Disease Occurring in Two Brothers. J. N. Briggs, J. F. Goodwin and A. Wilson.—p. 115.
Fluorescence Phenomenon of Tongue. W. Tomaszewski.—p. 117.
Treatment of Haemangiomatous Naevi with Thorium X. R. E. Bowers. —p. 121.

Methoin in Epilepsy.—Jones describes the use of methoin (mesantoin®; 3-methyl-5,5-phenylethylhydantoin) in epilepsy. He instituted treatment with methoin only after other remedies had proved ineffective. Patients with petit mal were not given methoin, as published results were so uniformly discouraging. A total of 41 patients were treated, but in only 24 (13 female, 11 male) were results considered suitable for assessment; the others either failed to take the drug regularly or did not keep adequate records of the number of their attacks. A detailed history was taken for determination of the type of epilepsy, and careful reference was made to previous drug sensitivity or other form of allergy. Treatment was usually begun with 0.1 Gm. twice daily, this being increased by 0.1 Gm. a day at weekly or fortnightly intervals, until the necessary amount was being taken. The number of attacks and the type were recorded at each interview, the frequency being later compared with that before methoin therapy. A reduction in seizures of 70 per cent or more occurred in 40 per cent of major epilepsy cases and in 31 per cent of patients with psychomotor epilepsy. Like other recently introduced preparations, methoin proves to be a valuable but sometimes toxic drug. In one case fatal aplastic anemia was observed. The author feels that methoin should be used only when every attempt to obtain control by other means has failed. A short trial with the drug may be made with safety, but, as beneficial effects usually appear quickly, administration should not be prolonged in patients who are resistant. If methoin is used, the patient and relatives should be told about its possible dangers, with the warning that they must report any suspicious symptoms at once. It should not be used in conjunction with other drugs likely to cause similar reactions. Blood examination should be done regularly throughout the period of treatment.

Strangulated Spigelian Hernia.—Spigelian hernia occurs along the semilunar line, usually near the level of the arcuate ligament. It penetrates the broad fascial band by which the internal oblique and transversalis muscles insert into the rectus sheath but lies under the aponeurosis of the external oblique. This tense aponeurosis obscures the hernia and makes it difficult to palpate. A stout woman, with a pendulous abdomen, for several years had had periodic abdominal distention and vomiting, sometimes with icterus and gallbladder colic. After cholecystectomy, which revealed a gallbladder packed with stones, colic and icterus were relieved, but the attacks of distention and vomiting continued. During one particularly severe attack tenderness in the right iliac fossa was extreme. A tense oval swelling about 3 by 2 inches (7.5 by 5 cm.) was palpated in the right iliac fossa, lying within the substance of the abdominal wall, parallel with the inguinal ligament and about 2½ inches (6.25 cm.) above it. Strangulated Spigelian hernia was diagnosed. An incision over the swelling revealed the hernia after the external oblique aponeurosis had been incised. The sac contained omentum and strangulated loops of small intestine, which were bound together by adhesions. These were divided, and the intestine was returned to the abdomen. The onset of acute strangulation at first closely imitated acute appendicitis. A case of Spigelian hernia described by Reid in 1949 likewise simulated acute appendicitis.

Indian Medical Association Journal, Calcutta

20:1-64 (Oct.) (Special Issue) 1950. **Partial Index**

*Modern Treatment of Malaria. R. N. Chaudhuri and B. N. Dutta.—p. 3.
Modern Treatment of Typhoid Fever. S. C. Chatterjee.—p. 13.
Modern Treatment of Leprosy. S. N. Chatterjee.—p. 19.
Heart Failure and Its Management. A. K. Bose.—p. 24.
Chemotherapy of Pulmonary Tuberculosis P. K. Chatterjee.—p. 27.
Modern Treatment of Epilepsy. T. K. Ghosh.—p. 35.

Modern Treatment of Malaria.—Malaria is the most prevalent and most important of all diseases in India. Its treatment must take into account the different stages and cycles in the development of the malarial parasites and the action of various drugs on these stages. There is no ideal or completely satisfactory antimalarial drug. Quinine, quinacrine, chloroguanide hydrochloride, chloroquine, camoquin and pamaquine are the most important antimalarial drugs. The details of their application are described, and their chemistry, absorption and elimination are outlined in an appendix to this paper. Rest during fever, hydrotherapy for hyperpyrexia and regulation of bowel functions are important in general management. The diet should be liquid during fever, light during afebrile intervals and normal soon after the fever subsides. Relapses occur, especially in vivax malaria. No drug in a single course can be relied on to prevent vivax relapses. A relapse is dealt with as the previous attack. With a view to preventing relapse, one may give paludrine hydrochloride, 0.3 Gm., or chloroquine, 0.25 Gm. (base), or camoquin, 0.2 Gm. (base), weekly for about six months. In chronic malaria treatment should begin with a full course of an antimalarial drug, preferably quinine, for a week, followed for three weeks by a mixture containing ferrous sulfate, potassium arsenite solution, quinine sulfate, and dilute sulfuric acid. To prevent further attacks of malaria, weekly doses of paludrine or biweekly doses of quinine should be given regularly for about six months, especially if the patient cannot leave the endemic area. Chemoprophylaxis that until recently played an important role in the control of malaria has been relegated to second place by the discovery of residual insecticides. This therapy is indispensable, however, for the control of an epidemic and for the suppression of malaria in localities where insect control is lacking.

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Lancet, London

1:65-122 (Jan. 13) 1951

Application of Psychology to Dermatology. R. M. B. MacKenna.—p. 65.
Recent History of Coronary Disease. J. N. Morris.—p. 69.
*Assessment of Extraperitoneal Caesarean Section. F. R. Stansfield and L. W. D. Drabble.—p. 74.
Oxygen Paradox: Experiments on Effects of Oxygen in Human Anoxia. F. Latham.—p. 77.
Method of Estimating Collateral Resistance During Obstruction of Main Artery to Limb. A. C. Dornhorst and E. P. Sharpey-Schafer.—p. 81.
Treatment of Early Syphilis with Penicillin, Neoarsphenamine, and Bismuth, and with Penicillin and Bismuth Alone. F. J. G. Jefferiss, R .R. Willcox and G. L. M. McElligott.—p. 83.
Streptomycin in Latent Genital Tuberculosis in Women. I. Halbrecht. —p. 85.
Bacteriological Control of Aureomycin Therapy. E. Topley, E. J. L. Lowbury and L. Hurst.—p. 87.
*Temporal Arteritis: Two Cases Treated with Aureomycin. J. M. Rice-Oxley and A. M. Cooke.—p. 89.
Penicillin in Weil's Disease. A. I. Suchett-Kaye.—p. 90.
Paratyphoid Urinary Carrier Treated with Chloramphenicol. J. M. Kennedy and E. L. M. Millar.—p. 92.

Extraperitoneal Cesarean Section.—Sedation, oxytocics, cervical incisions, craniotomy, transperitoneal cesarean section and cesarean hysterectomy have all been used in managing the labor of women who are actually or potentially infected, but since none of these methods was satisfactory, Stansfield began to employ extraperitoneal cesarean section. Since 1940 he has performed this operation in 52 cases (1 in 1,000 deliveries). It is a lower uterine segment operation. There is no intraperitoneal spilling of infected amniotic fluid and no risk of postoperative seepage through a peritoneal suture line; the likelihood of postoperative ileus is reduced, and there should be no postoperative adhesions. The operative field can readily be sterilized with sulfonamides and antibiotics and is easily drained. This operation is preferable to a difficult vaginal procedure. It provides easy access to the uterus, with a clear view of the operative field, permitting adequate hemostasis and accurate coaptation of the edges of the uterine wound. The objections that the technique of the operation is difficult or that injury of the bladder and ureters is likely to occur are not valid, since this operation is to be performed only by experienced pelvic surgeons. The cases in which the operation was performed fell into two groups: (1) those in which uterine inertia had persisted so long that the patient was rendered potentially or frankly infected, and the cervix had not yet reached the stage of full dilatation, so that successful vaginal delivery of a living infant had become unlikely; and (2) those in which cephalopelvic disproportion or malpresentation precluded the vaginal delivery of a living child, whether or not the stage of full cervical dilatation had been reached, and in which outside interference had rendered any form of transperitoneal cesarean section dangerous. The 52 mothers were operated on without a fatality, but there was one stillbirth and three neonatal deaths. The authors feel that the extraperitoneal approach to the uterus permits a further justifiable extension of the indications already accepted for cesarean section and at the same time leads to a reduction in the total incidence of the operation, because the surgeon may safely allow a trial of labor to proceed far longer than is the present custom.

Aureomycin in Temporal Arteritis.—Temporal arteritis occurs in elderly patients and is characterized by an inflammatory reaction in the temporal arteries, with headache and signs of constitutional disturbance, including fever, sweating, anorexia and loss of weight. The temporal arteries are thickened and tortuous and the overlying skin is often reddened. In some cases the disease spreads to the retinal vessels and causes disturbances of vision. The etiology remains obscure, but, in view of the inflammatory changes in the walls of the affected vessels and the fever, infection seems to be the most likely cause. The authors tried treatment with aureomycin in the two cases reported on here. The first patient was free of symptoms after two weeks' treatment with 0.5 Gm. of aureomycin every six hours, and he has remained well since. The other patient did not tolerate aureomycin well, and the drug had to be stopped before a complete course could be given. However, the patient showed much improvement while under treatment, and she had a relapse within 48 hours of withdrawal of the drug. The authors feel that aureomycin deserves further trial in temporal arteritis.

New Zealand Medical Journal, Wellington

49:635-754 (Dec.) 1950

*Practical Details of Methonium Treatment of High Blood Pressure. F. H. Smirk.—p. 637.
Tumours of Bone. R. K. Scott.—p. 644.
How is Poliomyelitis Spread? Epidemiological Study. F. S. Maclean. —p. 652.
Shortage of Nursing Staff: Suggestions to Improve Position. H. S. Kenrick.—p. 671.
Chloroform in Obstetrical Anaesthesia. F. H. Smirk.—p. 676.
Excess Vitamin A as Cause of Food Poisoning. T. C. Lonie.—p. 680.
Glioma of Optic Nerve: Report of Case Cured by Operation. R. M. Mitchell.—p. 686.
Common Skin Diseases of Face. R. G. Park.—p. 689.
Spontaneous Movement in Childhood. I. M. Allen.—p. 694.
Spontaneous Haemothorax and Haemopneumothorax. J. A. K. Cuningham.—p. 708.
Studies on Pathogenesis of Rheumatic Fever: II. Comparison of Antibodies to Haemolytic Streptococci in Patients with Rheumatic Fever, Patients with Mild Streptococcal Infections and Normal Control Groups. L. Kirschner and K. Martin.—p. 713.

Methonium Compounds in High Blood Pressure.—Clinical trials with methonium compounds in 100 hypertensive patients, 30 of whom were selected for treatment with these drugs, indicate that a substantial fall of blood pressure is induced in all the common forms of arterial hypertension. A subcutaneous injection of either pentamethonium or hexamethonium bromide is given first as a trial dose, with the patient in the sitting posture. If the patient is over 60, frail, on a salt-free diet or if he has congestive heart failure, the trial dose may be given in two equal parts, the second part being given 45 minutes after the first, if the level of the blood pressure and the patient's general condition permit it. Blood pressures and pulse rates are taken throughout the test at 10 minute intervals. The patient should be warned to mention faintness or lightheadedness, and the level of the blood pressure at which faintness occurs should be recorded. This may be at 160 systolic or as low as 90 systolic. The blood pressure should not be allowed to fall below 110 or 100 systolic. The trial injection is a guide to the initial therapeutic dose. Treatment is usually started with a subcutaneous dose of 15 or 20 mg. given at 7 a. m., 12:30 and 7 p. m.; in other cases this dose is given only twice a day (7 a. m. and 2:30 p. m.). At first, habituation to the drug is rapid, and each dose may need to be increased by 5 or 10 mg. daily for the desired effect to be maintained. After several weeks, the dose may have risen to 200 or 250 mg., but eventually no further increase is needed. The effect of the methonium should be assessed about 40 minutes after the injection with the patient in the sitting posture and also, if he is ambulant, standing. The patient should be in the sitting or standing posture throughout the day and inclined at between 30 and 45 degrees from the horizontal during the night. The reduction in the blood pressure effected by this treatment may be in the range of 50 to 100 mm. A diet with restricted salt intake may multiply the effect of a dose of methonium several times. If a fixed dose of pentamethonium or hexamethonium is given without regard to the changing sensitivity of the patient early doses are likely to be dangerous and the later ones ineffective; side effects will be severer and relief of symptoms less satisfactory. In some patients oral therapy gives effective control of the blood pressure levels.

Practitioner, London

166:1-106 (Jan.) 1951. **Partial Index**

Speculations on Etiology of Rheumatoid Arthritis. W. Bauer, W. S. Clark and L. Dienes.—p. 5.
Bearing of Recent Advances on Etiology and Treatment of Rheumatic Fever. E. G. L. Bywaters.—p. 14.
Fundamental Treatment of Rheumatoid Arthritis. J. J. R. Duthie.—p. 22.
ACTH and Rheumatoid Arthritis. F. T. G. Prunty.—p. 33.
Hormonal Disturbances Associated with Rheumatoid Arthritis and Related Conditions. G. F. Marrian.—p. 43.
Pathology of Rheumatoid Arthritis. H. J. Gibson.—p. 54.
Genetic and Endocrine Aspects of Gout. C. J. Smyth.—p. 62.
A G. P. Looks at Rheumatisms. C. G. Learoyd.—p. 68.

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Thorax, London

5:283-394 (Dec.) 1950

Chondromatous Hamartoma of the Lung. C. J. Carlsen and W. Kiaer. —p. 283.
Twenty-Seven Cases of Syphilitic Aneurysm of the Thoracic Aorta and Its Branches. J. Borrie and S. G. Griffin.—p. 293.
Maximum Breathing Capacity Test. J. L. D'Silva and D. Mendel.—p. 325.
*Pulmonary Histoplasmosis. P. G. Arblaster.—p. 333.
Probable Case of Pulmonary Histoplasmosis Diagnosed in England. J. Crofton.—p. 340.
Fifty-Seven Cases of Diaphragmatic Hernia and Eventration. C. J. Evans and J. A. Simpson.—p. 343.
*Removal of a Hydatid Cyst from Wall of Left Ventricle. A. L. d'Abreu. —p. 362.
Perforation of Trachea and Bronchus by Bronchoscope. W. Gordon. —p. 369.

Pulmonary Histoplasmosis.—Arblaster reports on a man aged 36 with pulmonary histoplasmosis. The patient's early life was spent in England, but between 1931 and 1937 he had lived in Canada, where he was employed as an agricultural laborer. In 1938, after a bout of coughing, he expectorated a small volume of fresh blood. Further hemoptyses occurred on three subsequent days. He was thought to have pulmonary tuberculosis, but remained well and worked as a flat roof repairer until 1945, when during two weeks he had several hemoptyses. After a short rest at home he returned to work. He had a large hemoptysis in January 1949 and was admitted to the hospital in a state of shock. A chest roentgenogram revealed numerous nodular lung lesions, many of which were calcified and ranged from 0.25 to 1.5 cm. in diameter. In some the calcification assumed a "halo" or "dot and ring" pattern. The mediastinal changes were typical, both in character and in the great degree of lymph node enlargement. The sputum was examined on nine occasions, but no acid-fast bacilli were observed. Six cultures for tubercle bacilli were negative. The erythrocyte sedimentation rate was 35 mm. in the first hour. A severe local reaction followed the injection of 0.1 milliliter of standard histoplasmin at a dilution of 1:10. There was a positive response to further tests made four and five months later. Attempted culture of the fungus from four sputum and two fecal specimens was unsuccessful. Complement fixation tests with histoplasmin antigen gave positive results only at a dilution of 1:10. The absence of a significant titer does not invalidate the diagnosis of histoplasmosis, since there are recorded cases of histoplasmosis proved by culture of the fungus in which at times a normal titer was observed. Sternal marrow culture was found to be negative. These results might reasonably have been expected from the prolonged illness of the patient. The positive skin reaction, gross hilar adenopathy and typical pulmonary roentgenogram with halo calcification lead to the diagnosis of histoplasmosis. The case reported on is unusual, because the presenting symptom was hemoptysis and the period of observation was 10 years. Infection probably took place in Canada.

Removal of Hydatid Cyst of Myocardium.—A women aged 50 complained of an irritative cough, hemoptysis and persistent pain in the splenic area. Examination revealed an enlarged spleen. The maximum cardiac impulse was in the midclavicular line in the fifth left interspace but cardiac dulness was increased to the left of the sternum. No other abnormal physical signs were observed in the chest. The pulse rate was 82, the cardiac rhythm was normal and there were no murmurs. There was secondary anemia of minor degree, with no increase in the eosinophil count. A posteroanterior roentgenogram disclosed a large ovoid mass continuous with the left border of the cardiac outline. Transmitted pulsation, which was continuous with the heart outlined in all positions, was demonstrated in the shadow. The mass in the oblique and lateral views was situated mostly over the area of the left ventricle. With the patient under intratracheal anesthesia the left side of the chest was opened through the bed of the resected sixth rib. The left lung seemed normal in all respects. A large bulge was seen in the pericardium posteriorly. The pericardium was opened widely, revealing in the wall of the left ventricle a glistening, pearly white area similar to that sometimes seen on the visceral pleura overlying a pulmonary hydatid cyst. The thickened epicardium over the cyst was incised and the capsule exposed. After a portion of the contents of the cyst was aspirated through a fine bore needle the semiflaccid cyst was removed intact, as it separated readily from the wall of its false capsule. When distended postoperatively, the cyst measured 6 by 4 cm. Scolices were recovered from the fluid in the cyst. Convalescence was uneventful. The hemoptysis that had been a constant preoperative feature ceased, and there was no recurrence in the first postoperative months. The cause of this hemorrhage remained unexplained. Splenectomy was performed four months later, and the spleen was found to contain a huge hydatid cyst. The patient recovered uneventfully from this operation and remained in excellent health. According to the author this is the first report of successful removal of a hydatid cyst from the heart.

Acta Orthopaedica Scandinavica, Copenhagen

20:97-180 (No. 2) 1950. **Partial Index**

*Chemistry of Synovial Fluid with Special Regard to Hyaluronic Acid. L. Sundblad.—p. 105.
Protein Pattern of Joint Exudates. B. Olhagen.—p. 114.
Some Views on Treatment of Knee-Joint Exudate. R. Magnusson. —p. 130.
Treatment of Chronic Exudative Gonitis by Total Synovectomy. H. Wahren.—p. 136.
Contact Between Articular Cartilage and Medullary Cavities of Bone. D. E. Holmdahl and B. E. Ingelmark.—p. 156.
Experimental Investigations Regarding Amount of Mucopolysaccharides in Tendons After Prolonged Muscular Strain. M. Wrete.—p. 166.

Chemistry of Synovial Fluid.—From the biochemical point of view synovial fluid may be regarded as a plasma dialysate, containing varying amounts of protein and a specific component, hyaluronic acid. The latter gives the fluid its high viscosity and thus its ability to form a lubricating film, separating the articular ends. The author presents the results of determinations of the hyaluronic acid content, viscosity and protein content of synovial fluids in such conditions as traumatic synovitis, arthritis deformans, lesions of the menisci, rheumatoid arthritis and acute and subacute infectious arthritis. The author feels that the chemical analysis of joint fluids is valuable in the differential diagnosis of articular disorders. The detection of degraded hyaluronic acid in an effusion of supposed traumatic genesis suggests the existence of an underlying joint disease, especially if the concentration of hyaluronic acid is high. High protein content indicates that the disease is of an infective type, and low protein content indicates a degenerative type of joint disease.

Deutsche medizinische Wochenschrift, Stuttgart

75:1741-1756 (Dec. 29) 1950. **Partial Index**

Pregnancy and Delivery in the Course of Diabetes Mellitus. G. Hörmann. —p. 1741.
*Clinical Course of Epidemic and Hematogenic Hepatitis. A. Oppermann and P. Wedekind.—p. 1744.
*The Comparative Microscope: Its Use in Histologic and Cytologic Studies. W. Langreder.—p. 1749.
A Compound of Methionine, Amino Acids and Vitamin B for the Treatment of Parenchymal Diseases of the Liver. H. R. E. Enzmann. —p. 1752.

Clinical Course of Epidemic and Hematogenic Hepatitis.—In an investigation of 107 hospitalized patients with icteric hepatitis the following factors were studied: duration of the disease, enlargement of the liver, lymphocytosis, leukocytosis, serum bilirubin, urinary bilirubin, fever, the spectrum of serum proteins at the beginning and end of the period of hospitalization and, in some instances, the outcome of several functional tests. Differentiation between epidemic and hematogenic hepatitis was difficult. Patients who had had injections, transfusions or blood withdrawal from two to six months previous to the onset of the hepatitis were regarded as having the hematogenic form, although the authors were aware that epidemic hepatitis could also develop in such patients. There were 58 cases of hematogenic hepatitis and 49 cases of epidemic hepatitis. The hematogenic cases included 18 syphilitic patients who had received injections of neoarsphenamine, 10 patients with diabetes and 30 patients who had been subjected to venipuncture or injection

for other reasons. The cases were grouped according to the severity of the clinical course into mild, moderate and severe cases. It was found that on the whole the hematogenic cases were severer than the cases of epidemic hepatitis. Either form was especially serious when it occurred in syphilitic or diabetic patients. In contrast to the experience of other investigators the authors were unable to find essential differences in the outcome of the so-called instability reactions of the serum (e. g., Takata reaction, Weltmann's coagulation band, thymol turbidity, and thymol flocculation) between the hematogenic and epidemic form of hepatitis. The authors feel that these tests are not really specific for hepatic diseases. The clinical picture also permits no definite differentiation between hematogenic and epidemic hepatitis. On the basis of three fatal cases of epidemic hepatitis, the authors conclude that prolonged malnutrition and failure to enforce bed rest in hepatitis are potentially serious.

The Comparative Microscope: Its Use in Histology and Cytology.—The study of two specimens side by side was deemed helpful in detection of the minutest functional and cyclic changes in cells of the female genitalia. To accomplish this the comparative microscope was used, an instrument used so far chiefly in forensic medicine, for instance, in the identification of missiles. This instrument makes it possible to examine two specimens in a single field of vision. Recently a comparative microscope has been developed that permits examinations with oil immersion. In histological examinations a test preparation can be used for comparison. So that cumbersome individual measurements need not be made, a slide micrometer can be put in place of one of the specimens. In this manner it is possible to estimate absolute magnitude directly. The comparative microscope reveals smallest differences in shape and magnitude of very similar histological specimens. Structures and cells in regions subject to cyclic or functional changes are especially suitable for this type of examination. Normal histological pictures can be established for certain functional conditions. The systematic evaluation of smears of blood and secretions is facilitated. Comparative microscopy also makes the recognition and classification of pathological granulations and neoplasms more reliable.

Maandschrift voor Kindergeneeskunde, Leyden

18:357-388 (No. 10) 1950. **Partial Index**

*Hypertelorism Combined with Polydactylism, Hyperphalangism and Digital Spatulation. D. P. R. Keizer.—p. 373.
Familial Congenital Neuroectodermal Dysplasia. W. H. H. Tegelaers. —p. 376.
Cystic Fibrosis of Pancreas Presenting as Virus Pneumonia. I. van der Hal.—p. 381.

Hypertelorism Combined with Polydactylism, Hyperphalangism and Spatulated Fingers.—A combination of congenital defects not observed before was encountered in the second child of healthy parents. At birth it was noted that the child had six fingers and six toes bilaterally. The sixth digits were surgically removed. With further development it became apparent that the child had an unusually large head and that the eyes were exceptionally far apart (ocular hypertelorism). When the child was 7 years old examination of the hands revealed extremely long thumbs with three joints, spatulated enlargement of the tips of the fingers, web formation, clinodactyly of the first, second, fourth and fifth fingers and camptodactyly of the little finger. Roentgenoscopy disclosed hyperphalangism of the thumbs and spatulation of the terminal phalanges. The deformities of the feet were similar to those of the hands. The most unusual feature of this case was the deformity of the fingers, which on superficial inspection resembled clubbed fingers, but which roentgenologically showed widening of the terminal phalanges. In an addendum to this paper the author says that he recently observed another child with hypertelorism (circumference of head 57 cm. [normal 52 cm.] and distance between the lacrimal caruncles 42 mm. [instead of about 33 mm.]), who also had digital deformities, but of a somewhat different nature.

Medizinische Welt, Stuttgart

20:41-74 (Jan. 13) 1951. **Partial Index**

Infected Wounds of Fingers and Hands. L. Böhler.—p. 41.
The General Adaptation Syndrome and Diseases of Adaptation. H. Selye. —p. 46.
Disturbances After Gastric Resection. W. Kaufmann.—p. 48.
American Observations on Histoplasmosis. M. Daelen.—p. 51.
*Sulfonamides and Fetal Development. W. Föllmer.—p. 53.

Sulfonamides and Fetal Development.—According to Föllmer, sulfonamides administered to a pregnant animal pass the placental barrier and reach the fetus. When the administration is prolonged, the concentration in the fetal serum is about the same as that in the maternal serum. Experiments are described that indicate that prolonged administration of sulfonamides during pregnancy exerts a damaging effect on the fetus, but this harmful effect becomes manifest chiefly after delivery, in that growth in length and increase in weight are retarded in the young animals. Apparently, compensatory mechanisms in the maternal organism prevent serious damage to the fetus during the intrauterine life, because experiments on tadpoles demonstrated that sulfonamides do inhibit the growth of embryonal tissues. Thus the sulfonamides not only exert bacteriostatic effects but also cytostatic effects on embryonal tissues. The tadpole test, which the author describes, apparently is capable of demonstrating cytostatic effects of various substances, such as vitamin B_{12} and choline, on embryonic tissues.

Nederl. Tijdschrift Verlosk. Gynaec., Haarlem

50:315-396 (No. 6) 1950

Rare Form of Incomplete Rupture of Uterus. T. J. van Sante.—p. 315.
*Extraperitoneal Cesarean Section. I. S. Sindram.—p. 321.
Hirsutism of Ovarian Origin. A. W. Stokhuyzen.—p. 337.
*Embolism Due to Amniotic Fluid. R. F. van Wering.—p. 351.

Extraperitoneal Cesarean Section.—After reviewing the history of the extraperitoneal cesarean operation, the authors evaluate its present status and conclude that this intervention is still of value. Different techniques and their advantages and disadvantages are discussed and are compared with the transperitoneal cesarean section. The extraperitoneal operation not only improves the prognosis for the mother but can also be a life-saving procedure for the infant. The author believes that the indications for extraperitoneal cesarean section are about the same as the contraindications to transperitoneal cesarean section: (1) the patient is in labor and the membranes have been ruptured more than 24 hours; (2) previous intrauterine instrumentation (e. g., bougie, condom-catheter and metreurynter); (3) repeated vaginal examinations; (4) signs of uterine infection (fever, discharge of offensive odor, uterine tympanites), and (5) infections of the vulva or abdominal wall.

Embolism Due to Amniotic Fluid.—The histories of two patients are presented who died shortly after delivery. Necropsy revealed masses of squamous epithelial cells, such as are found in the amniotic fluid, in various organs. The author briefly reviews reports by Steiner and Lushbaugh, who were the first to describe these amniotic fluid emboli.

Praxis, Bern

40:1-20 (Jan. 4) 1951

*Goiter Endemic in Northeastern Switzerland; Results of 27 Years of Prophylaxis with Iodized Salt. M. Richard.—p. 1.
Present Attitude of Urologists Concerning Adenoma of Prostate. C. Perrier.—p. 6.
Necessity of Constant Terminology in Medicine. G. Piotrowski.—p. 8.

Goiter Endemic in Northeastern Switzerland.—The Swiss cantons of Saint Gallen, Thurgau and Appenzell represent one of the regions of Switzerland in which goiter is endemic. One third of all the surgical interventions for goiter in Switzerland are performed in this region, which comprises only one ninth of the total population of Switzerland. In this region there is a chronic iodine deficiency of at least 150 gamma daily. Prophylaxis of goiter by iodizing of all the salt used in these cantons was started in 1922 and 1923. It reduced the iodine deficiency to about 100 gamma daily. During the period 1922 to

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1949 the incidence of goiter decreased greatly. In newborn infants it was reduced from 33.3 to 6.8 per cent and in school children, from 65 to 8.6 per cent. While an average of 67.2 per cent of the young men of military age were not fit for military service because of goiter before the introduction of iodized salt, the ratio fell to 0.7 per cent after its introduction. Between 1922 and 1949 the number of operations for goiter increased only 30 per cent, while the number of operations for hernia increased 53 per cent and the total number of operations increased 200 per cent. The relatively slower increase in surgical interventions for goiter, in spite of the fact that these operations now may be performed much more frequently for cosmetic purposes, is to be considered as one of the results of prophylaxis with iodized salt. The recurrence rate was also reduced. The author's own experience as well as experience in America suggest that the prophylactic iodine dose should be increased. The daily iodine dose should be high enough to cover the deficiency but low enough to prevent toxic manifestations. A prophylactic dose of 200 to 300 gamma seems advisable and may be obtained with iodized salt that contains 20 mg. of potassium iodide per kilogram, based on the following computation: the ingestion of naturally occurring iodine in deficient regions amounts to a maximum of 50 gamma. Ten to 15 Gm. of salt (containing 20 mg. of potassium iodide per kilogram) provides 153 to 230 gamma, so that a total daily dose of 203 to 280 gamma results. This daily dose is sufficient to prevent goiter due to iodine deficiency. Administration of vitamin A should be combined with iodized salt prophylaxis.

Semaine des Hôpitaux de Paris

27:163-196 (Jan. 14) 1951

*Etiological Factors Predisposing to Hypertension as Complication of Pregnancy. P. Milliez and D. Fritel.—p. 163.
Course of Gastric Cancer. R. A. Gutmann and J. Daoud-Gutmann.—p. 166.
Bronchoscopic Observations in 150 Adults with Pulmonary Tuberculosis. A. Lévi-Valensi, A. Zaffran and C. Molina.—p. 171.

Hypertension as Complication of Pregnancy.—A study of 173 women who were found to have hypertension during pregnancy revealed three etiological factors that may predispose pregnant women to hypertension. A large number of complications during pregnancy occurred in women with vascular disturbances: one third of the authors' patients had permanent arterial hypertension preceding their pregnancies, while in about 10 per cent of the patients the hypertension was latent during the intervals between the pregnancies and was manifested with each new pregnancy before it became permanent. Hypertension as a complication of pregnancy occurred, although less frequently, in women with renal disturbances, such as isolated albuminuria, chronic glomerulonephritis (in 14 of the authors' cases), ascending nephritis secondary to chronic pyelitis that began during a previous pregnancy and lipoid nephrosis. These renal disturbances entail transitory vascular changes that may be revealed by pregnancy and afterward by manifest arterial hypertension. In the absence of vascular and renal disturbances, isolated and transitory hypertension of pregnancy may be observed in very young primiparas who have not yet reached complete uterine and endocrine maturity. Functional insufficiency of the uterine arteries and hypertonia of the uterine muscle are apparently an important cause of placental disturbances toward the end of the first pregnancy but do not recur during later pregnancies. Systematic examinations of blood pressure, renal function tests and intravenous urography occasionally reveal a preexistent vascular or renal disturbance in pregnant women. Such observations make it possible to anticipate complications during subsequent pregnancies and to institute treatment directed toward the etiological factor. Permanent hypertension preceding pregnancy may be benefited by extensive sympathectomy, which will be most effective when performed before the beginning of pregnancy. Intensive and prolonged antibacterial treatment of pyelonephritis in pregnant women will prevent the occurrence of ascending nephritis causing subsequent arterial hypertension. Endocrine treatment may prevent the complications of hypertension in young primiparas.

Ugeskrift for Laeger, Copenhagen

112:1741-1760 (Dec. 21) 1950. **Partial Index**

*Can Arteriosclerosis Be Prevented or Possibly Diminished? K. Kjerulf-Jensen.—p. 1741.
Use of Tobacco and Diseases of Heart and Circulatory Organs in Persons Aged 26 to 28 in Bornholm. H. Hove.—p. 1744.
Narcotic Intoxication Treated in Medical Division of Bornholm Hospital from 1936 to 1950. G. Belling.—p. 1747.
Cutaneous Lesions Caused by Beryllium. K. Ellebaek Petersen.—p. 1749.
Hepatitis and Vitamin K. P. Gøtzsche.—p. 1753.

Can Arteriosclerosis Be Prevented or Diminished?—Kjerulf-Jensen says that atheromatosis may be produced when more fat is consumed than the body can oxidize properly. Ability to oxidize fat is diminished when carbohydrate oxidation is reduced, as in diabetes, vitamin B_1 deficiency and probably in hypothyroidism. Strong therapeutic measures can also be dangerous. Sudden rigorous inanition in an obese person will be followed by great mobilization of fat, manifested in part by hyperlipemia. An attack of coronary thrombosis may be the result. Reduction of weight should occur slowly and not be marked by overly rigid periods of fasting. Prevention of arteriosclerosis is one of the most important problems for the coming years.

Wiener klinische Wochenschrift, Vienna

63:1-20 (Jan. 5) 1951. **Partial Index**

Organic Foundations of Psychoses. H. Hoff.—p. 1.
Q Fever. G. Meldolesi.—p. 5.
*Can Intracranial Injection Replace Lobotomy in Patients with Intractable Pain? F. Mandl.—p. 13.
Incidence of Serum Hepatitis. E. Rissel and F. Wewalka.—p. 16.

Can Lobotomy Be Replaced by Intracranial Injection?—Would it be feasible to replace lobotomy by infiltration of the frontal part of the brain with procaine hydrochloride or with a 6 per cent aqueous solution of phenol, particularly when lobotomy is done for intractable pain due to cancer? This is the question which Mandl tried to answer. Although the effect of such an infiltration may be of limited duration, it could perhaps be repeated, if necessary, once a small bore hole has been made. However, since the life expectancy of the cancer patients, for whom this treatment is principally intended, is usually short, the temporary effect may not be a disadvantage. Furthermore, the mortality of this intervention will probably be less than that of lobotomy. The author presents observations of four patients with severe pain from advanced cancer (cervix or bronchus), in whom he resorted to infiltration of the frontal brain with from 2 to 14 cc. of a 1 per cent solution of procaine hydrochloride. Repeated infiltrations were required, the effect usually lasting only a few days. However, in one of the patients the effect of the first infiltration persisted for 50 days. The author regards this case and one of the others as successful; in the other two the treatment failed. He feels that this treatment could be tried as an alternative to lobotomy in suitable cases.

Wiener medizinische Wochenschrift, Vienna

101:1-28 (Jan. 6) 1951. **Partial Index**

Preliminary Report on Examination of Congenital Cardiac Defects by Cardiac Catheterization and Angiocardiography. K. Fellinger and W. Weissel.—p. 3.
*Surgical Treatment of Acute Febrile Cholecystitis with Particular Consideration of Early Operation. H. Finsterer.—p. 4.
*Effect of Vitamin B_{12} in 34 Cases of Pernicious Anemia. R. Klima and G. Wengraf.—p. 7.

Surgical Treatment of Acute Febrile Cholecystitis.—Finsterer considers early surgery within the first 24 to 48 hours as the safest method of treatment for acute febrile cholecystitis, because severe complications, such as perforative peritonitis, acute pancreatic necrosis and sepsis may best be prevented by this method. Late surgical intervention often represents a last attempt to save the life of the patient who has been sent by the internist to the surgeon only because of such complications after conservative treatment has failed. Early surgery should be done not only in younger patients, but also in patients over

60 years of age. The author does not agree with those who interpret the mortality statistics as a contraindication to early surgical intervention in the older patients. Of 215 operations for acute febrile cholecystitis performed at private hospitals from 1910 to 1949, 79 were early operations and 136 were late operations. In those operated on early there was a mortality rate of 3.8 per cent, as compared with a mortality rate of 16.9 per cent in those with late operations. Of 576 operations for acute febrile cholecystitis performed at the Vienna general hospital during the period 1935 to 1949, 270 were early operations and 306 were late operations. There was a mortality rate of 3.7 per cent in the first group and 10.5 per cent in the second. Early intervention was done on three patients between the ages of 80 and 87 with gangrene of the gallbladder, and all three recovered. The risk of diffuse peritonitis in cholecysteciomy is not as high as is generally thought. No death from peritonitis occurred in the patients who were operated on either early or late before the gallbladder had perforated. The type of anesthesia is important. Ether and hexobarbital sodium (evipal*) are contraindicated. Local anesthesia of the abdominal walls and anesthesia of splanchnic nerves or paravertebral anesthesia are recommended.

Effect of Vitamin B_{12} in Pernicious Anemia.—Twenty-six patients with pernicious anemia were treated with pure vitamin B_{12}. A daily dose of 15 gamma of vitamin B_{12} given intramuscularly or intravenously proved adequate for the restitution of a normal blood picture. Reactions of hypersensitivity or intolerance were not observed. Mild symptoms of funicular myelitis, present in some patients, were improved by the treatment. Disturbances of this type did not appear during treatment in patients who did not have them before. Maintenance treatment with vitamin B_{12} (15 gamma per week) was given to eight patients for about 10 months after the anemia was corrected. Improvement was maintained during the continued treatment. Further improvement was obtained during the maintenance treatment in seven patients. Neurological disturbances did not occur. Comparison of the results of vitamin B_{12} therapy with those of folic acid (pteroylglutamic acid) and liver extract therapy showed that with sufficiently high doses an optimum hematopoietic effect can be obtained with each of the three methods. Folic acid seems to have one decisive advantage over vitamin B_{12}, namely, that the same optimum hematopoietic effect may be obtained with the same dose of folic acid whether it is administered parenterally or by mouth, while for the same effect with vitamin B_{12}, administered orally, 400 gamma are needed, instead of the 15 gamma required by parenteral route. Combined preparations of vitamin B_{12}, folic acid and liver extract were given a therapeutic trial in eight patients. The number of patients is too small to permit definite conclusions, but these preparations did not seem to show mutual potentiation of effect. Vitamin B_{12} had a favorable effect on refractory nonregenerative anemia in some cases. Genuine aplastic anemia did not respond to vitamin B_{12}.

Zeitschrift für Immunitätsforschung, Jena

108:99-192 (Dec. 29) 1950. **Partial Index**

Significance of Control Reactions in the Biologic Protein Differentiation in Forensic Medicine. K.-E. Schoenherr.—p. 109.
Limits of Serologic Specificity in the Salmonella Organisms. H. Billaudelle.—p. 119.
Question of Agglutination and Hemolysis of Various Types of Blood Cells by Colon Bacillus. K.-O. Vorlaender.—p. 138.
*Immunizing Effect of Schick Test. G. Wildführ.—p. 162.
Experiences and Comparisons on Effects of Parenteral and Peroral Immunization Against Typhoid. J. Raettig.—p. 165.

Immunizing Effect of Schick Test.—The antitoxin level of the serum at which the Schick test produces a negative reaction is designated as the Schick threshold. It lies between 1/50 and 1/30 of an antitoxin unit per cubic centimeter of blood. However, since the limit of a reliable protection lies at 1/20 of an antitoxin unit per cubic centimeter, i. e., above the threshold, the Schick test is not completely reliable but can only serve as a method of general orientation. It should be remembered that the toxin of the Schick test acts as an antigen and stimulates production of specific antibodies. To ascertain the immunizing effect of the Schick test, Wildführ determined the diphtheria antitoxin content of the serum in 103 children who were susceptible to diphtheria. The determinations were repeated after three successive Schick tests. At the first examination the antitoxin content per cubic centimeter of blood was 1/200 of a unit in 26 children, 1/100 unit in 39 children and 1/50 in 38 children. Three weeks after the first Schick test 24 per cent of the children showed an increase in antitoxin content. Three weeks after the second Schick test 40 per cent showed an increase in antitoxin content, and three weeks after the third test 61 per cent showed an increase. These investigations prove that the toxin of the Schick test acts as an antigenic stimulus. This stimulus is especially pronounced in cases in which the antitoxin values are close to the Schick threshold. In such cases repeated Schick tests may actually immunize the patient. In cases in which the antitoxin values are below 1/100 of an antitoxin unit per cubic centimeter the antigen stimulus is significantly less. Thus the value of repeated Schick tests is limited.

Zentralblatt für Chirurgie, Leipzig

75:1361-1439 (No. 20) 1950. **Partial Index**

Technic of Plastic Repair of Roof of Acetabulum. F. Loeffler.—p. 1369.
Retrograde Dilatation of Esophageal Strictures. H. Kuntzen.—p. 1373.
Surgical Removal of Urethral Fistulas. E. Heller.—p. 1382.
*Prevention of Recurrence of Stones After Cholecystectomy. K. Scheele.—p. 1384.
Ligation of Vessels in Acute Hemorrhages from Peptic Ulcer. A. W. Fischer.—p. 1387.

Prevention of Recurrence of Stones After Cholecystectomy.—Scheele observed that the manipulations involved in detachment of the fundus of the gallbladder from its bed may cause stones from the bladder to slip into the common duct. This complication and the resulting apparent recurrence of stones may be avoided, the author says, if the cystic duct is ligated at the beginning of the cholecystectomy, even if the approach is by way of the fundus.

75:1441-1504 (No. 21) 1950. **Partial Index**

Indication for Surgical Intervention in Penicillin-Treated Acute Hematogenous Osteomyelitis. J. Krall.—p. 1442.
Development of Blood Transfusion Organization in Germany and Experiences with Transfusions of Preserved Blood. H. Busch.—p. 1449.
Tumors of Adrenal Cortex with Virilism. W. Klostermeyer.—p. 1454.
*Peculiar Chronic Inflammatory Contraction of Fascia Lata. H. Bräutigam.—p. 1461.

Chronic Inflammatory Contraction of Fascia Lata.—Bräutigam reports a case of chronic inflammation of the fascia lata resulting in hyperplasia and contracture in a girl aged 12. The disease began in early childhood. The changes in the fascia lata caused abduction contracture of the homolateral leg resulting in an oblique position of the pelvis and, consequently, much scoliotic deformation of the thoracic and lumbar portion of the spine. Pain in the region of the spine and of the hip increased gradually as a result of the disturbance of weight bearing. The patient limped. A sarcoma was suspected because of adhesion of the skin to the large fascial tumor. The patient was admitted to hospital and fasciectomy was performed. Microscopic examination of the excised hyperplastic, indurated and contracted fascia lata with adhesions of skin and muscles revealed chronic fascitis with typical inflammatory changes. Subcutaneous fat, subfascial muscular apparatus and, particularly, the tensor fasciae latae were involved in the inflammatory process. The pathogenesis was not clear. This case differs from three cases reported by Stamatopoulos, which had a similar clinical aspect but no inflammatory changes in the extirpated fascia lata. The author's patient was benefited by surgery; the leg could be moved freely; the position of the pelvis was restored to normal, and deformity of the spine was no longer demonstrated. The disturbance of gait had disappeared completely. Fascial hyperplasia and contracture in the absence of inflammatory changes in Dupuytren's contracture and in plastic induration of the penis are described briefly.

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BOOK REVIEWS

The Atom at Work. By Jacob Sacks, Ph.D., M.D. Cloth. $4. Pp. 327, with 54 illustrations. The Ronald Press Company, 15 E. 26th St., New York 10, 1951.

One is impelled to declare this book by far the best of many recent books explaining the broader aspects of nuclear physics in nonmathematical terms. The secret of its remarkable interest and clarity is, perhaps, that the author has resisted every temptation to impress or to mystify; whatever subjects are taken up are presented with a wealth of exact detail that comes, on the one hand, from a profound understanding of the underlying general principles and, on the other, from authentic information about small and large scale technics in all parts of the United States. The book traces the story of natural and artificial radioactivity through the opening chapters on the discovery of radium and the development of the theory of relativity to its culmination in two chapters on atomic warfare, past and future, and useful power as the ultimate goal. It is the piling up of concrete facts that gives this book its impact. The chapters dealing with what radiation does to living beings and radioactive isotopes in hospital and clinic can be read with profit by every physician and medical student. The illustrations are illuminating, and there is a good index.

Die klinische Untersuchung des Nervensystems. Von Prof. Dr. med. G. H. Monrad-Krohn, F.R.C.P., Direktor der Universitäts-Nervenklinik Oslo. Ausgabe in deutscher Sprache herausgegeben und übersetzt von Dr. med. habil. Heinz Köbcke. Ninth edition. Cloth. 29.70 marks. Pp. 384, with 131 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O, 1950.

This book from Oslo, widely used in the Scandinavian countries, appears now in a smooth German translation. The author states that it is not a compilation from other sources so much as a summary, originally written for his own use, of diagnostic methods he has found useful. After a 12 page statement regarding psychic findings, there are sections on the cranial nerves, syndromes related to the hypophysis, special diseases of the facial nerve, motor phenomena, sensory phenomena, vasomotor and trophic phenomena, malingering, electrical methods of diagnosis, and examination of the cerebrospinal fluid. An appendix contains interesting addenda relating to intelligence tests, diplopia, ventriculography, angiography and neuroanatomy. The sections relating to chronaximetry and electroencephalography are brief and leave one in doubt whether data from either procedure have ever influenced the author in formulating a prognosis or planning a course of treatment. From so experienced a clinician, a cleancut statement on these difficult points would be especially valuable. The book is well indexed.

An Outline of Scientific Criminology. By Nigel Morland. Cloth. $4.75. Pp. 284, with illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1950.

The author is an English writer who has previously published other monographs relating to various phases of scientific criminology. According to the preface of this book, the author states he now feels "capable of launching a definite outline of scientific criminology in an attempt to contain, between two covers, most of the essential elements of all that goes to make up the subject." Most of the court cases cited throughout the book refer to English trials, and there is a pardonable amount of pride expressed in the success and capabilities of English experts, but it is conceded, however, that some other countries, notably France and the United States, have also made great contributions in this field. Chapters on forensic ballistics, medical jurisprudence, cryptography and secret writing and the applications of scientific criminology illustrate the scope of material considered, and the book ends with a plea for the establishment in England of a medicolegal institute. The book cannot be used as a reference work for experts and students, since the treatment of most of the subjects is far too sketchy. As an outline, however, which is all the book purports to be, it is worthwhile reading, since it presents a good picture of the progress that has been made in the application of science to the problem of crime.

Recent Advances in Nutrition with Particular Reference to Protein Metabolism. By Paul Cannon, Ph.D., M.D., Chairman of Department of Pathology, University of Chicago, Chicago. In collaboration with Earl P. Benditt, M.D., and others. Porter lectures, series 14. Cloth. $2. Pp. 74, with 23 illustrations. University of Kansas Press, Lawrence, Kansas, 1950.

The text consists of three lectures delivered before medical school audiences by the author. Proteins and amino acids receive primary emphasis throughout the text, as they have in the author's recent notable series of research papers. The first chapter includes a brief but broad appraisal of the interrelationships of other nutrients, however, supplemented by a pungent commentary on failures to use well established concepts in the science of nutrition as guides in food practices. Applications of new discoveries are cited frequently and with discretion, especially in discussions of the evidence derived from rat repletion experiments. Strong support is cited for the concept that good nutrition, including emphasis on completeness and timing of intake, is necessary to enable the body to develop or maintain immunity against infections, to rebuild body protein and restore normal functions after traumatic injury and to meet many forms of physiological stress, such as those imposed by burns, toxins, starvation and extremes of temperature. The author's own observations are reviewed admirably in the broader framework of their relationship to the work of other investigators such as Rose, Whipple, Du Vigneaud and their associates.

Common Diseases of the Ear, Nose and Throat. By Philip Reading, M.S., F.R.C.S., Surgeon to Ear and Throat Department, Guy's Hospital, London. Cloth. $4.50. Pp. 288, with 39 illustrations. The Blakiston Company (Division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1950.

This book has been prepared for the student and the newly qualified practitioner. The material is well written, easily read and presented in a practical manner. Operative technic, with the exception of those attempted by house staff and general practitioners, anatomy and physiology have been awarded very little space for the sake of brevity. Otology is covered in 96 pages, rhinology in 76, laryngology in 39, throat, including tonsillectomy technic and complication, in 47. There is a short chapter on new growths of the nose and pharynx, and included also is a chapter on the use of penicillin and sulfonamides.

A book of this type cannot be written to please everyone. Practitioners should be warned against the possible danger of the use of 4 per cent cocaine spray and applications of cocaine crystals. Certainly the student or newly qualified practitioner should be careful of the toxicity of the drug until he becomes familiar with its use. Nasal allergy deserves some space in any modern book in otolaryngology. The value of the nasal smear in the differentiation of allergic from infectious conditions should be emphasized. This book is very similar to others of its type.

The Frog: Its Reproduction and Development. By Roberts Rugh, Ph.D., Associate Professor of Radiology (Biology), Department of Radiology, Columbia University, New York. Cloth. $4.25. Pp. 336, with illustrations. The Blakiston Company (Division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1951.

This is a well illustrated and clearly written text on the embryology of the frog. Particularly helpful is the glossary of some 750 embryologic terms. A bibliography for frog embryology is also included. The book should be of special interest to workers in the fields of physiology, cytology, genetics and experimental embryology and also to those performing pregnancy tests utilizing the frog.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Fainting: Physiological and Psychological Considerations. By George L. Engel, M.D., Associate Professor of Medicine and Psychiatry, University of Rochester School of Medicine & Dentistry, Rochester, New York. Cloth. $2.75. Pp. 141, with 4 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; The Ryerson Press, 299 Queen St., W., Toronto 2B, 1950.

This is an excellent book. The various forms of clinical conditions leading to fainting are briefly analyzed, and their physiological components are described. In the case of hysterical fainting, proper weight is given to the psychological factors involved. The role of the electroencephalogram in differential diagnosis is emphasized, and each of the major clinical groups is illustrated by a pertinent clinical case history. Fainting due to fall in arterial blood pressure is subdivided into vasodepressor syncope (the commonest form of fainting), orthostatic hypotension and conditions of increased intrathoracic pressure. The second major group consists of various conditions leading to cardiac standstill. About heart disease and fainting, Engel states:

> Physicians and patients commonly associate fainting with heart trouble, but most patients who faint do not have heart disease and of those who do, relatively few faint. On the other hand since heart disease is the most frequent cause of death, perhaps it would be more correct to say that fainting with heart disease actually is common, but the first attack is usually fatal.

Cerebral vascular disorders and disturbances in cerebral metabolism (particularly anoxemia and hypoglycemia) are discussed. Chapters on hysterical fainting and hyperventilation follow. The book is concluded with sections on diagnosis and differential diagnosis of syncope. There is a short but well selected bibliography. The book is highly recommended.

Savill's System of Clinical Medicine Dealing with the Diagnosis, Prognosis, and Treatment of Disease for Students and Practitioners. Edited by E. C. Warner, M.D., F.R.C.P. Thirteenth edition. Cloth. $7. Pp. 1198, with 202 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

This well known book provides a helpful and probably as up-to-date a treatise as can be found today when authors and publishers cannot keep up with changing therapeutics. While it is of English origin, the book contains much that will make it welcome to American teachers and students. It is written in a friendly, almost informal way with a minimum of wasted words and yet a wealth of helpful hints. There are ample illustrations for a general book of this type, and the reader can profit from them. There is surprisingly little difference in terminology from that now employed in the United States, although it does now seem strange to see a discussion of neurasthenia. While this book probably will be more widely accepted by the British, it unquestionably will have a fair following in the United States, in spite of the many other excellent books that are now available on this subject.

The National Health Service Acts, 1946 and 1949: Being the Complete Text of the Acts and of the Statutory Instruments, Rules and Orders Made Thereunder, Fully Annotated with an Introductory Explanation of the Acts. By J. A. Scott, O.B.E., M.D., D.P.H., Deputy Medical Officer of Health, London County Council, London, D. J. B. Cooper, A.C.I.S., Principal Clerk, Public Health Department, London County Council, London, and S. Seuffert. With index to whole compiled under supervision of H. A. C. Sturgess, M.V.O. Cloth. 55s. Pp. 1192. Eyre & Spottiswoode, Ltd., 14-16 Bedford St., Strand, London, W.C.2, 1950.

For the physician, dentist, pharmacist, nurse or the student of political medicine, this book is an interesting reference book. It is a comprehensive book documenting the British compulsory health service scheme. Parts I and II are introductory and include the authors' summary of the scope and structure of the National Health Service, as well as the background of social policy related to social legislation and the planning of the National Health Service, into which is incorporated some of the proposals of the medical profession. Part III is an annotated copy of the National Health Service Act of 1946, showing the amendments by other legislation. The text of the National Health Service Act Amendment of 1949 constitutes part IV. The largest portion of the book is part V, which includes all the statutory instruments, rules and orders (as amended) issued up to March 31, 1950. These are the rules and regulations propounded by the Minister of Health in carrying out his interpretation of the intent of Parliament. Several of the more important forms necessary in the administration of the scheme are reproduced and supplement the rules and regulations. The appendices include a chart showing the administrative structure of the plan, descriptive lists of health centers and disclaimed hospitals and the complete text of sample circulars issued by the Ministry of Health.

Marginated notes assist the reader in searching for particular information. The authors made the book as comprehensive as possible and have managed to present their summation in a clear, concise manner, without argument. They have left the reader to frame his own opinion. The book apparently is not intended as an explanation of the British plan and is, therefore, uninteresting except for those who read and understand legislative language. Such language needs to be interpreted first by parliamentarians, then expanded into words of wider use for acceptance by the average person affected by the law. In other words, this reference book could not be properly labeled as an elementary guide to the British health scheme. It is, however, all that the authors intended it to be.

Praktikum der wichtigsten Infektionskrankheiten. Von Prof. Dr. C. Hegler. Fifth edition, edited by Prof. Dr. H. E. Bock, Direktor der medizinischen Universitätsklinik Marburg(Lahn). Cloth. 14.70 marks; $3.50. Pp. 277. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; Agents for U. S. A.: Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1950.

This handbook on the important infectious diseases was originally written by the late Professor Hegler, Director of Saint George's Hospital in Hamburg. The present edition has been revised by his old student and former assistant, Professor H. E. Bock. The purpose of the work is to present in succinct form the chief symptoms, the diagnosis and, above all, the newest therapy of the important infectious diseases. The author points out that it is also necessary to discuss some infections not hitherto regarded as especially important, since the intimate association of masses of people of many nationalities brought about by the tremendous dislocations of World War II has favored the spread of many previously localized infections.

After a discussion of the general principles underlying the diagnosis, prophylaxis and treatment of infectious diseases, the book is divided into chapters on the common exanthems, on disease of groups with a common symptom (jaundice, for example), according to anatomic site or according to generalized symptoms. There is a final chapter on the newer antibiotic drugs.

The book, a small octavo, covers 277 pages and obviously cannot go into great detail. It does, however, give the essential facts in simple language, including the synonyms for each disease in English, French, Italian and Russian. It is substantially bound in blue cloth and is printed in clear type on paper of good quality. There are no illustrations, but there is a brief bibliography covering important books and articles, and occasional references are given in the text. There is a good index. Especially helpful is a table giving the original and revised bacteriologic names of the etiological agents in the more important infections. There is also a useful table giving a list of the different types of causal agents (bacteria, viruses and rickettsias) and the effect on them of the sulfonamides, penicillin, streptomycin, aureomycin and chloramphenicol chloromycetin®). The book should be of value as a quick reference for the busy practitioner who can read German.

Early Embryology of the Chick. By Bradley M. Patten, Professor of Anatomy, University of Michigan Medical School, Ann Arbor. Fourth edition. Cloth. $3.50. Pp. 244, with 102 illustrations. The Blakiston Company (Division of Doubleday & Company, Inc.), 1012 Walnut St., Philadelphia 5, 1951.

This small volume, first published in 1920, needs no introduction to most students of medicine since it is used widely in this country as an elementary textbook in embryology. In this edition many of the illustrations have been enlarged and labeled in larger type, while the section on gastrulation has been rewritten. In revising the text, however, the author has not lost sight of his original objective, a simply presented story of the early development of the chick.

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QUERIES AND MINOR NOTES

DANGERS ARISING DURING TREATMENT OF NARCOTIC ADDICTION

TO THE EDITOR:—*What is the mortality rate that occurs during the cure of narcotic addiction? Why are hypertensive addicts particularly liable to die during the cure? What would be the probable danger in curing addiction in a person who has had a complete pneumonectomy? What is the most likely cause of death during the cure of addiction? What books are available on the treatment of addiction since dolophine® came into use?* *M.D., South Carolina.*

ANSWER.—"Cure" is slang for the relief of physical dependence on a narcotic drug. The real cure of addiction is much more difficult. One should uncover the basic difficulty that led to the use of narcotics, try to correct this difficulty and then try to reverse the almost inevitable regression that occurs after a long period of addiction. Not all the legally designated "narcotic" drugs produce physical dependence; this phenomenon has never been demonstrated for cocaine or for marihuana. Then, too, drugs only mildly or not at all restricted, for example, the barbiturates and alcoholic beverages, cause the development of physical dependence, and their abrupt discontinuance produces a spectacular and dangerous abstinence syndrome.

The mortality for the treatment of an uncomplicated abstinence syndrome should be zero. Intercurrent disease may complicate the problem. When an addict has an acute infection or a serious injury, attempts at drastic withdrawal of the drug must be postponed until the acute condition has been relieved or has become static. The physician who intends to relieve an addict of his physical dependence must ask himself, "What am I trying to do: take an addict completely off his drug, or treat an ill person?" When a patient's environment is so controlled that he is unable to obtain drugs clandestinely, a fairly rapid reduction over some days or weeks can be safely carried out. Extremely slow reductions are unnecessary and throw a heavy load on staff and patient. During a rapid reduction, if the major danger signs are carefully watched for (widely dilated pupils, diarrhea, and rapidly rising temperature) and the physician is willing promptly to give a supplementary injection of morphine, the patient's safety will not be endangered.

It is not known why patients with hypertensive cardiovascular disease do badly when one persists in trying to "get the patient entirely off" his drug, but it is a fact that they do. Earlier stages of withdrawal are borne well, but, when the lower dosages are reached, decompensation usually appears and again the physician's attitude is important. Occasionally one encounters an addict with no demonstrable disease whose temperature rises when the lower dosage levels are reached.

Addicted patients with a recent pneumonectomy should have a "maintenance" dose until convalescence is completed. Here, again, one must maintain unceasing vigilance to detect early indications of serious abstinence complications.

The commonest cause of death during a "cure" of an uncomplicated case of physical dependence is failure to watch for the danger signs, and unwillingness to give an adjuvant dose of morphine sulfate or its equivalent when these appear. One must distinguish between what the patient needs and what he wants. Too often one makes the mistake of withholding a dose because the patient demands it. The cardinal signs referred to will help the physician determine for himself the needs of his patient. One complication must be mentioned. Addicts are well posted on the character and progress of the abstinence syndrome, but they do not realize how rapidly they lose their tolerance for the opiates. Several deaths have occurred in patients who obtained access to an opiate and took what was the usual dose before withdrawal was instituted. Death occurs quickly, and there is no particular sign other than slowing of respirations and pinpoint pupils. No books on handling the abstinence syndrome have appeared since amidone (dolophine®) hydrochloride became available. Isbell and Vogel, in 1948, presented a paper before the American Psychiatric Association which covered the research done on this substance in the Research Laboratory of the United States Public Health Service Hospital in Lexington, Ky. If the inquirer will write to the Medical Officer in Charge, United States Public Health Service Hospital, Lexington, Ky., he probably can obtain an outline of this treatment.

A not infrequent complication of the "cure" of physical dependence in an opiate is the occurrence of the abstinence syndrome for the barbiturates. The original work on these dependencies was reported in *The Archives of Psychiatry and Neurology* by Kalinowsky (December 1942). The characteristic manifestation is an epileptiform convulsion. The difficulty arises out of the failure of the patient to report or of the physician to inquire whether barbiturates have been used and in what amounts. Usually the more rapidly acting preparations are used. A routine for the withdrawal from an opiate is instituted, which is rudely interrupted within 36 hours by a convulsion. While death apparently has not been reported from this complication, the establishment of status epilepticus is a possibility. The usual occurrence is the fracture of one or more bones. Possibly the barbiturate convulsion is much severer than others. In addition to the watchfulness and care that the physician must exercise in treating the abstinence syndrome for an opiate, he must be sure that his patient is not "loaded" also with an abstinence syndrome for a barbiturate. The prevention of this complication is, of course, simple administration of a barbiturate if there is any suspicion that one of these has been taken, even in therapeutic doses. The abstinence syndrome for alcohol also is an epileptic seizure which usually occurs soon after the last drink.

VERNAL CONJUNCTIVITIS

TO THE EDITOR:—*A 13 year old girl has severe vernal catarrhal conjunctivitis. Results of allergy studies are negative. I have given at least six treatments with solid carbon dioxide as recommended by some oculists, but the hyperplastic follicles have not regressed. This patient has not menstruated. If hormonal therapy to induce menstruation is beneficial, please outline the treatment.*

Jack Webb, M.D., Blytheville, Ark.

ANSWER.—Vernal conjunctivitis is generally accepted as allergic in nature, but sensitizing agents are almost never found. The evidence is strong that endocrine dysfunctions are predisposing factors, as the disease occurs commonly in vagotonic children with hypertrophied tonsils and adenoids, enlarged cervical glands and disorders attending puberty. In 1948 del Rio of Mexico found endocrine insufficiency referable to the gonads in two thirds of his cases.

The treatment is symptomatic. A change from a hot to a cold climate seasonally or permanently is generally effective. Radium often gives lasting relief with replacement of cobblestone follicles by smooth scar tissue; but, as many cases of cataract have followed its use, beta radiation is now preferred. The most promising remedy of recent date is the local use of cortisone acetate, either full strength or suspended in one to four volumes isotonic sodium chloride solution instilled every hour during the day. A. C. Woods (*Am. J. Ophth.*, Sept. 1950) reports a dramatic response in a combined palpebral-bulbar type of six years' duration in which corneal infiltration had reduced vision to perception of hand movements only. Within two weeks the follicles had decidedly regressed and vision rose to R. 20/100, L. 20/40.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

USE OF SALICYLATES IN TUBERCULOSIS

To the Editor:—*I have done tuberculosis work for many years and in that time have found two institutions in which the use of salicylates, especially aspirin, in patients susceptible to pulmonary hemorrhage is deplored. I can find no literature on this. Please suggest treatment for headaches and rheumatic conditions.*

M.D., Texas.

Answer.—Theoretically there is danger in the use of salicylates in potential hemorrhage states. This danger should be guarded against. If large doses of salicylates are administered, the prothrombin time should be determined. If the level is above 20 to 30 per cent, there is no danger. If it gets below 15 and 10 per cent, then some precaution should be taken. Salicylic acid does interfere with the production of prothrombin in the liver, but its potency is only about 1/20 that of bishydroxycoumarin. As to the treatment of rheumatic conditions, of course, a proper diagnosis should be made and a particular remedy applied as best suited to the type of rheumatism. Many other remedies may be substituted for salicylates in most rheumatic conditions. On the whole, the fear of hemorrhage from the administration of ordinary doses of salicylate is greatly exaggerated. There need be little fear if the dosage is 1 Gm. or less per day.

PUSTULAR BACTERID

To the Editor:—*About a year and a half ago, I had a blister on the inner side of the left heel, which failed to heal; the resulting lesion has been diagnosed by several dermatologists as "pustular bacterid." Ointments, antibiotics, roentgen rays and lotions have been used. Thorough physical examinations disclose no foci of infection, but the lesion persists with no change. Please advise me on further procedures.*

M.D., California.

Answer.—The nosologic picture of pustular bacterid is not settled. Some dermatologists think the condition to be pustular psoriasis, and others call it recalcitrant eruption. Those who consider it to be a pustular bacterid attribute it to a focus of infection, particularly in the tonsils, and they advocate elimination of the focus of infection. Not all the cases however are in this group. Those that are not in this category are notoriously resistant to treatment. The use of anthralin ointment, or a coal tar ointment combined with ultraviolet rays, sometimes effects a satisfactory result. At other times treatment with a nonspecific mixed vaccine is effective. Too often, as in this case, treatment is ineffective.

CONTINUOUS DRAINAGE AFTER CHOLECYSTECTOMY

To the Editor:—*A patient had a cholecystectomy. It is now five weeks since draining through a T tube began. Profuse drainage of normal, liver bile, light in color, occurred. What can be done to stop this draining? The T tube was withdrawn four weeks ago. The patient has gained strength and weight, but drainage will not cease.*

Herman F. Ahrens, M.D., New York.

Answer.—There are several possible causes of the condition mentioned. The first consideration is that the common duct was accidentally cut across at the time of operation. If that is the explanation, then a reoperation for the purpose of a reconstruction of the common duct must be performed. Another possibility is that a stone is present in the distal portion of the common duct, so that the bile cannot pass down that portion of the duct into the duodenum. A third possibility is that sometimes an opening into the common duct is slow to heal.

Since it is not stated whether the patient had gallstones or whether he had evidence of biliary obstruction before the operation, it is difficult to discuss the probability that a stone may be causing obstruction of the distal portion of the duct.

Cholangiography through the fistula, for visualization of the stone in the lower fragment of the duct, is advisable. If a stone is seen on the x-ray by that method, another operation will be necessary to remove it. Even if a stone is not seen, almost certainly another operation will be required if the flow of bile continues unabated. This operation will be for the purpose of exploring the common duct to see (1) whether it has been cut across and (2) to remove any obstruction that may be present in the lower portion. There may even be an obstruction at the papilla of Vater. Of course, if the outside wound heals and the patient becomes jaundiced, it will be necessary to operate again, because that will be a clear indication of an obstruction of the common duct.

FUMES FROM A GARAGE

To the Editor:—*Two of my patients who work in an office on the ground floor opposite a garage complain of the exhaust fumes from the cars. Toward 3 p. m. they usually feel sick and tired without any specific symptoms. They take a short walk in the fresh air and come home relieved. Is this likely to be a monoxide poisoning? What methods should be used to detect obviously minute quantities of monoxide or other poisonous gas?*

M.D., New York.

Answer.—Close proximity to a garage could provide insidious exposure to carbon monoxide gas, since many garages exhaust operating motors through low level lateral vents. The presence of this gas in a nearby work place readily may be established through small detecting devices usually available in cities and commonly through departments of health. A dependable type is manufactured by Mine Safety Appliances Co., Pittsburgh. Any reading above 100 parts per million should cause concern, but such findings as 5 to 10 parts per million, if never greatly exceeded, may be ignored. Numerous tests should be conducted, particularly at the time of alleged symptoms. Another but more difficult procedure is measurement of the percentage of blood saturation by carbon monoxide. A percentage up to 5 might arise from mere excess of tobacco smoking and is without known detriment. Symptoms begin when the degree of saturation is near 15 to 20 per cent; with a saturation above 40 per cent unconsciousness may appear. As to other possible exposures, more information may be gained by inspection of the garage premises and practices. If, for example, electric motors are washed in carbon tetrachloride with venting at low levels damage might conceivably arise in nearby areas.

SNORING

To the Editor:—*Your answer to a query on snoring in the issue of Nov. 4, 1950, prompts the following amplification on the subject based on an experience many years ago.*

A young patient wrote me from his honeymoon expressing fear that his marriage would fail because his snoring kept his bride awake so much that they were forced to occupy separate cabins. He could not afford separate bedrooms when he returned and therefore asked my help. I had him examined and found no evidence of organic obstruction or disease in the nose or throat. I then tried the two types of fairly well known therapy that were mentioned in the answer to the query mentioned above. In one case the patient is made to lie on his side, usually by means of a gadget attached to the back of his pajamas. In the second, the mouth is kept closed, thus preventing mouth breathing. Each attempt was unsuccessful. I remembered the stertor that frequently occurs during general anesthesia when the chin is allowed to drop and that is relieved immediately by hyperextension of the neck. Acting on this idea, I had lateral roentgenograms taken of the patient's pharynx and was able to demonstrate with the head in the normal or flexed position that both the epiglottis and uvula were almost in contact with the posterior pharyngeal wall. On hyperextension they became separated by a considerable distance. I therefore fitted the patient with a simple, easily applied and removable Thomas collar, asking him to use it that night. When he came in the next day, he was greatly pleased, for the device had eliminated his disability, and for the first time his wife had been able to get a good night's sleep. The patient subsequently discarded the Thomas collar and merely slept on his back with a small pillow at the nape of the neck. He is now happily married and has two children.

Robert Elman, M.D., St. Louis.

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